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ORIGINAL RESEARCH

Alcohol harm and cost at a community level: data from police and health

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ABSTRACT

Introduction: The Australian National Alcohol Strategy 2006-2009 recommends strengthening data collection at the local level, gathering information from emergency department (ED) attendees and, by integrating data sources, to develop a better understanding of alcohol- related harm. We piloted a method to estimate the number of alcohol-related presentations to ED and alcohol-related police incidents in a remote regional centre. We explore the practicality and benefits of integrating such alcohol related police and health data. Subjects and setting: Broken Hill Hospital is the district hospital that serves Broken Hill and surrounds in far west New South Wales, a population of approximately 20 000, over 90% of whom live in the town itself. Computerised records of all attendances are available. The Barrier police command is based in Broken Hill with 56 police.

Method: Over two one-week periods a combination of a short patient questionnaire, nurses' assessment and concordance with Broken Hill police records were used to determine alcohol-related presentations.

Results: Both health and police data showed seasonal variation, with alcohol-related incidents and costs doubling in warmer weather. Altogether 32 people (5% of all 602 presentations) were recorded as having consumed alcohol prior to the event that brought them to ED. From 765 events, police attended 118 (15%) alcohol-related incidents. While the two groups were essentially independent, they were very similar demographically. The majority (68%) were males aged in their 30s who came to ED/ police

notice in the late evening/early morning, mainly in the weekend. By integrating police data, routine ED data and an ED survey, a more comprehensive picture of alcohol-related harms emerged.

Conclusion: Future research would benefit from the use of project officers in ED and in the police force, to improve compliance and data completeness. A more comprehensive local picture would also include data from other agencies dealing with alcohol. A longer study is necessary to confirm the preliminary data on seasonal variation.

Key words: alcohol, emergency department, injury prevention/ early intervention, intoxication, police incidents/crime.

Introduction

The burden of disease associated with alcohol is significant[1,2] but this has not received the same public attention as illicit drugs[3-5]. Self-reported risk drinking is increasing[6,7] in Australia but declining in the state of New South Wales (NSW)[8]. The hospitalisation rate for all alcohol attributable conditions and for injuries in NSW is increasing, with higher rates in rural and remote areas[8].

In Broken Hill, a regional centre in far west NSW (Fig 1), alcohol-related hospital admissions decreased between 1999 and 2000, and in the period 2004-2005[6]. Self-reported risk drinking in Greater Western Area Health Service (GWAHS), which includes Broken Hill, also declined[9] but is still higher than the NSW average. People in the Divisions of General Practice in western GWAHS reported more risk drinking than those in eastern GWAHS, and more than in most urban GP Divisions[8,10]. Alcohol-related crimes, including drink driving, assaults and domestic violence, were higher in Broken Hill than NSW overall[11-13].

The Australian National Alcohol Strategy 2006-2009[14] recommends strengthening/ exploring data collection at the local level by integrating health and police data in order to develop a better understanding of the extent of alcohol-related harm.

Community feedback to the NSW State Plan[15]; the re-establishment of the Community Drug Action Team; the newly formed, Broken Hill based, Lower Far West Regional Reference Group to reduce violence against women; and the Barrier Liquor Accord suggest a growing community concern and a commitment to addressing harm caused by alcohol. From the 2006 Census[16], Broken Hill local government area had a resident population of just under 20 000, of whom 10% were males aged 20-39 years - the main risk group. Broken Hill is an active mining town so an increase in the number of males in this age range is likely.

In this pilot study we explored the practicality and benefits of integrating alcohol-related police and health data in a remote regional centre.

Method

The study was conducted in different seasons in 2006 (week 1 in June [winter], and week 2 in November [late Spring]) because anecdotally alcohol incidents/ presentations increase in warmer months. These weeks were chosen because they contained no public/ school holidays, special local events or police operations.

Emergency department patient recruitment

Alcohol-related presentations were those that met any one of the following criteria: those who self-reported alcohol consumption via a survey; a nurse's assessment; patients whose incident was flagged as alcohol-related in police records; or those who had a diagnosis of acute alcohol (ICD9 codes).

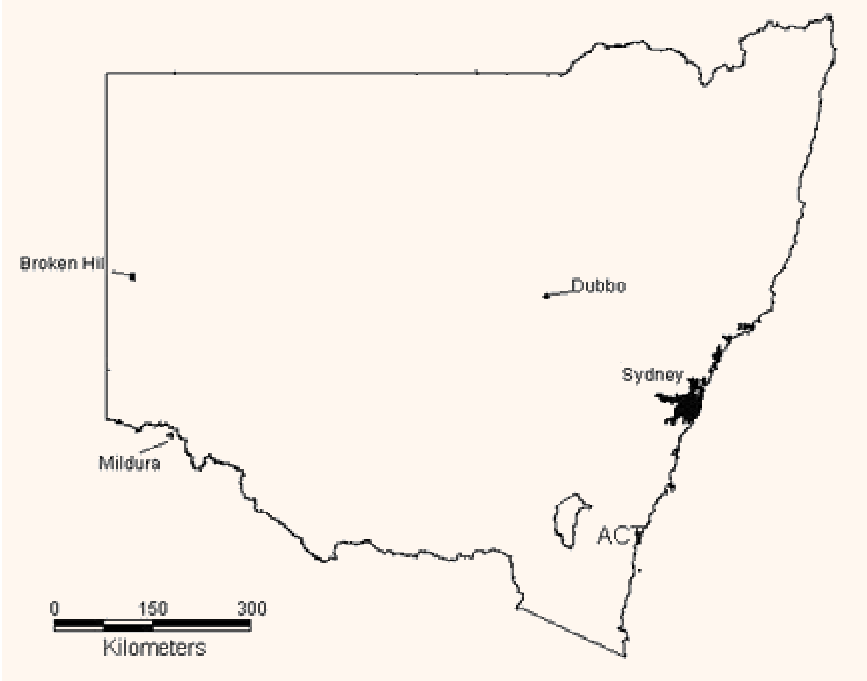

Figure 1: New South Wales showing Broken Hill and the nearest larger towns: Mildura (Victoria), Dubbo and Sydney.

The nurse assessment is a short narrative of the patient's presenting problem and how it occurred. If the nurse has a reason to believe the patient has been drinking alcohol, questions may be asked about alcohol consumption.

All ambulatory patients 16 years and older who presented at the emergency department (ED) were asked by the triage nurse to complete a short questionnaire about their alcohol consumption. This was in order to maximise the number of participants and to minimise any recruitment bias. However, the triage nurse did not always have time to promote the survey.

Patients were considered ineligible if they were triaged (using the Australasian Triage Scale) as category 1 or 2 patients (requiring immediate resuscitation or treatment within 10 min); did not speak English; or could not give written consent/ complete a questionnaire (eg due to intoxication, other cognitive disability or literacy issues).

The following data were routinely collected: age and sex, time of presentation, triage category, diagnosis, nurse assessment and discharge status.

Survey development

In order to encourage participation the survey questionnaire was one page in length and required only tick-box answers. The questionnaire was derived from previous research[17-20] and asked:

- 'Have you had anything to drink (alcohol) in the 6 hours prior to the event that brought you here?'
- 'What were you drinking (eg wine, spirits, light beer)?'
- 'How much did you drink?'
- 'Where did you spend most time while drinking?'

The following four further questions were asked of patients presenting with an injury, although answers to these

questions were often missing and so were not included in the analysis: (i) 'Where were you when the injury happened?' (ii) 'What were you doing when the injury happened?' (iii) 'Was the injury caused by someone else?' (iv) 'If someone else caused your injury, in your opinion was the other person/s affected by alcohol?'

Police component

Police are required to enter information about alcohol involvement into the Computerised Operational Policing System (COPS) system for each incident they attend. They make a subjective assessment about whether alcohol contributed to the cause of the incident. The COPS number links to other routinely collected data, such as duration, age, sex, location, type of incident, police officer(s) present. All incidents flagged as alcohol-related were classified 'reactive' or 'proactive' incidents. Reactive incidents were those where police investigated an incident that had been reported, or came across the incident during their patrols. Proactive incidents were those initiated by police, such as random breath testing (RBT), or a business inspection of a licensed premise.

Most COPS events start as Computerised Incident Dispatch System (CIDS) records. These narratives were examined to determine if they were alcohol related. To avoid duplication when a COPS event was created from a CIDS narrative, only the COPS data were used by the police investigator. The CIDS narratives often indicate the involvement of more than one person but unless a COPS event is created, detailed sex, age and other statistics are not recorded. When there was doubt about alcohol involvement in CIDS that record was not included.

While the police investigator informed officers of the study, there was no difference in reporting alcohol-related incidents. Where necessary the police investigator took action to clarify the nature of incident and its duration.

Analysis

Only the original presentation was included, with review or re-presentation in the study period or subsequent weeks discounted.

Demography

Emergency department presentations: Simple descriptive statistics of age, sex, diagnosis, time of arrival in ED were presented. The alcohol consumption of those who completed the questionnaire (how much and where) was included.

Police incidents: From the de-identified police records, similar simple demographic information and location were described, including age, sex, incident type (eg assault, drink driving), and blood alcohol levels, where recorded.

The total number of incidents for the two periods were used to calculate the proportion of alcohol-related events, overall and in each study period.

Statistics

Analysis consisted of the calculation of 95% confidence intervals for the proportion of alcohol-related ED presentations and police incidents.

Ethics

Ethics approval (for both the health and police components) was obtained from the GWAHS and University of Sydney Human research ethics committees. Formal police approval was also obtained from the Barrier Local Police Commander.

Results

Emergency department

Over the 2 weeks, 32 (5.6%) from 602 presentations were considered to be an alcohol-related presentation (11/275 in

June and 21/ 327 in November). This was 3.5% (95% CI 1.3-5.6%) of all presentations in week 1 and 7.3% (95% CI 4.6-10.4%) in week 2.

Of the 32, 10 presentations were recorded as associated with consuming alcohol by the nurse only; eight by the survey only; seven by the police only; six by the nurse and survey (including one with an acute alcohol diagnosis); and one by nurse, survey and police.

Only one person was recorded on Emergency Department Inpatient Statistics (EDIS) with a primary or secondary diagnosis of acute alcohol with half reporting an unintentional injury (eg falling while intoxicated), or an injury from being assaulted. The nurse assessment recorded recent alcohol consumption for 17 people. Eight people who attended ED were also recorded on COPS as alcohol-related assault/ domestic violence. This included one of the 13 from 602 patients who were ineligible for the survey because they were categorised as triage 1 or 2.

One hundred and fifty-one completed surveys were returned (response rate of 26%). Patients were willing to answer questions on alcohol consumption, if asked, but staff reported they often lacked the time to fully engage respondents. The average age of survey respondents was 43 years for males and 41 years for females, compared with 46 years for all males and 48 years for all females.

Of the 151 respondents, 15 (10%) reported alcohol consumption (7 in week 1, and 8 in week 2). The survey captured 48% of the 32 people, including eight with no record of alcohol on EDIS.

Demographics of those who had consumed alcohol

Thirty-two people who presented to ED had consumed alcohol. Two-thirds of these were males compared with 52% of all ED presentations (Table 1). For all presentations the average age and sex proportions were the same for both weeks. The mean age of the 22 males presenting to ED was more than 10 years younger (32 vs 47 years for all males) and for females 6 years younger (42 versus 48 years). Removing an 82 year-old from the female drinkers group lowered the average age to 37 years. While three-quarters of all ED presentations occurred between 0800 and 2000 hours, half (53%) of all alcohol presentations were between 2000 and 0400 hours (Fig2). Over half (57%) of the 32 presented between Friday and Sunday, compared with 41% of all ED presentations.

One-third of drinkers who completed the survey admitted to heavy drinking (≥ 7 drinks) in the 6 hours prior to the event that brought them to the ED. Ten patients assessed as intoxicated by the nurse were assessed as having consumed a large amount of alcohol. Most drinking took place at someone's home (though some of the heaviest drinking was reported at licensed premises). Almost half had minor injuries, including lacerations, sprains/strains and closed fractures. The majority of alcohol-related presentations (80%) required ED treatment only, similar to the proportion for all ED presentations.

Police

From 765 COPS or CIDS events in the 2 week period, police attended 118 (15%) alcohol related incidents (Table 2). The proportion of alcohol-related incidents was significantly different between weeks 1 and 2. Overall, 66% of the alcohol-related incidents were reactive and 33% proactive. The number of proactive events was almost identical in weeks 1 and 2 but police time was less in week 1 than 2, due to RBTs being conducted in week 2.

Two-thirds of reactive events for the police also involved (large groups of) intoxicated people (38%) or dealing with assaults or domestic violence (27%).

Table 1: The demography of people who presented at the emergency department and/or came into contact with police (*n* = 72 recorded) for alcohol-related matters in week 1 or week 2, 2006

Emergency department (*n* = 32)			**Police (*n* = 72)**		
Variable	***N***	**Values**	**Variable**	**Values**	
Sex, mean (range)†		Years	Sex, mean (range)†	*N*	Years
Male	22	32 (18–61)	Male	49	31 (13–59)
Female	10	42 (17–82)	Female	23	30 (13–55)
Principal diagnosis (ICD9)			Blood alcohol¶		
Injury (includes assault)	17	53	Low	1	–
Intoxicated	1	3	Mid	1	–
Other	10	31	High	1	–
Did not wait	4	13	Location	Reactive *n (%)*	Proactive *n (%)*
Total	32	100	Licensed premise	3 (4)	12 (30)
			Residence	28 (36)	0
Alcohol survey (*n* = 15)			Street	34 (44)	7 (17)
Number of drinks		%	RBT	2 (3)	19 (46)
1–2	4	27	Other building	6 (8)	1 (2)
3–4	2	13	Other	4 (5)	2 (2)
5–6	4	27	Total	77 (100)	41 (100)
7–10	2	13	Type of incident		
11+	3	20	Intoxicated person/s	29 (38)	0
Total	15	100	RBT	2 (3)	19 (46)
			Assault (incl. DV)	21 (27)	0
Location of drink§			Licensed premise inspection	0	12 (30)
Licensed premise	8	40	Street offence	5 (6)	1 (2)
Residence	11	55	Mental health	3 (4)	0
Other	1	5	Miscellaneous	16 (21)	9 (22)
Total	20	100	Liquor Act	1 (1)	0
			Total	77 (100)	41 (100)

ED, Emergency department; RBT, random breath testing; DV, domestic violence.
†Sex [mean (range)] for all ED (*n* = 602): male (*n*=316) 47 (16–95), female (*n*=286) 48 (16–96).
¶Low, 0.05 to <0.08 g/100mL; mid, ≥0.08 to 0.149g/ 100 mL; high, ≥0.15g/100 mL.
§This includes those who completed the survey (*n* = 15) plus location noted from the nurse assessment or police records.

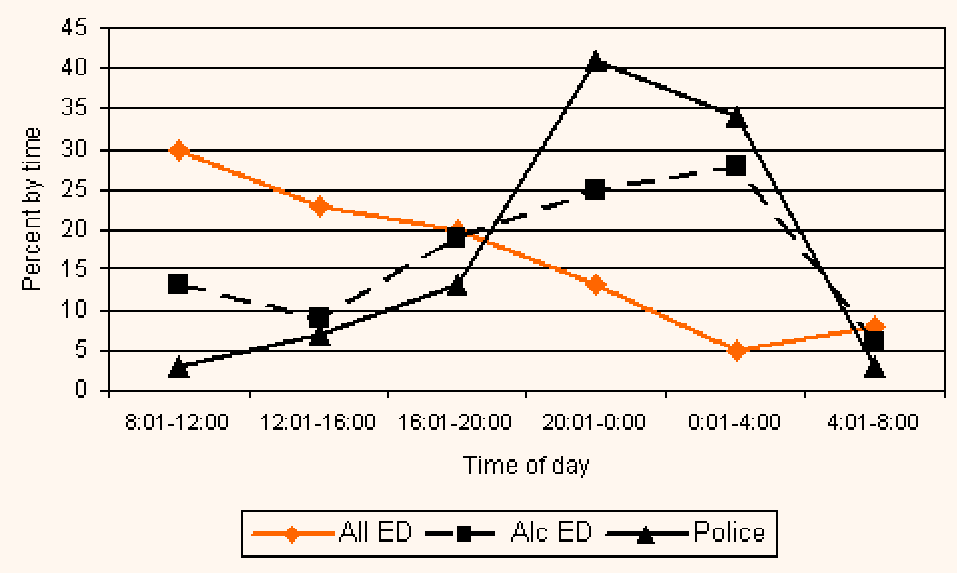

Figure 2: Presentation times for all emergency department, alcohol-related emergency department and alcohol-related policing.

Table 2: Police alcohol-related events (number and hours worked) in June, November and all, and as reactive and proactive incidents

Alcohol related	June	November	Total
Events/total events (*n*)	44/387	74/378	118/765
Events % (95% CI)	11 (7.9–14)	20 (16–24)	15 (13–18)
Reactive (*n*)	23	54	77
Hours	63.3	106.3	169.6
Proactive (*n*)	21	20	41
Hours	18.7	71.7	90.4

Demographics

Police data included those under 16 years. Details of 49 males and 23 females were recorded on COPS (Table 1). The mean age of males (31 years) seen by police was similar to those who presented to ED; however, females who came into contact with police were much younger than for ED presentations (30 years vs. 42 years).

Of the four charged with drink driving, two were in the high-range category. For police, a residence or street area were more likely locations for a reactive incident than proactively visited licensed premises. Three-quarters of alcohol events began between 2000 and 0400 hours (Fig2). While two-thirds of events commenced in weekends, the hours worked in relation to alcohol-related policing was spread more evenly over a week (Fig3).

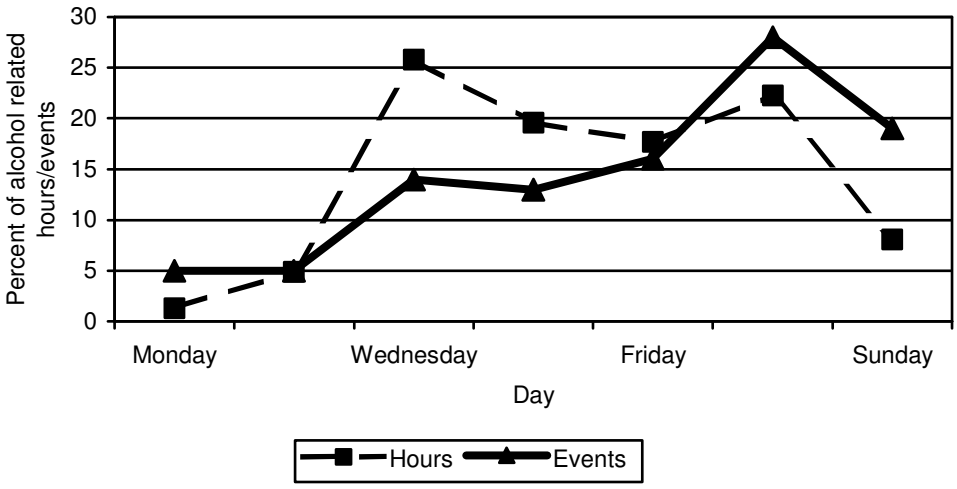

Figure 3: Alcohol-related policing (by hours worked) and events (by day of the week).

Discussion

Contact with an emergency department or police as an indicator of the need for alcohol prevention/intervention

By integrating police COPS and CIDS data, routine ED data and an ED survey, a more comprehensive picture of alcohol-related harms emerged. The CIDS revealed the extent of intoxication in the community that was not documented in COPS data. The ED survey netted eight people not recorded by a nurse as having consumed alcohol. In isolation the statistics of either agency would underestimate the alcohol harm in Broken Hill. Apart from eight males, those who presented to ED were not those who came to police notice. However, the two groups were similar: males in their 30s who came to ED/ police notice in the late evening/early morning, and mainly in the weekend.

Intoxication, and minor intentional and unintentional injury were the main consequences of incidents documented in health and police records[18,19,21,22]. Young et al.[23] concluded that late-night injury ED presentations were a reliable surrogate measure of alcohol-related problems in the community. In contrast to a large urban hospital[17], those surveyed in the ED and those who reported drinking had done so at a private residence.

Police and health data highlight specific situations or drinkers for targeted interventions

Most alcohol-related incidents happen outside standard business hours, and most ED presentations were not admitted to hospital. The situation is compounded by the limited hours of availability of the services and resources of referral agencies, when the police and ED operate for 24 hours.

Cherpitel et al. believe that the ED is an important place for early identification and referral of problem drinkers[24,25]. Whether brief interventions in ED are feasible is under

debate, with some authors judging this strategy to be too difficult[22,25-27], while others believe it can be effective[28-30]. As D'Onfrio states, staff always have time to ask an injured patient if they are vaccinated against tetanus and offer vaccination if necessary[26]. Staff commented that both ED staff and patients are 'task oriented' and that screening will slow task completion.

A new initiative designed to meet local requirements will provide a staff member focused on follow up. At a suitable time this staff member will follow up emergency patients who report drinking alcohol, and offer advice or referral based on the patient's willingness to change. This will require ED staff to be alert to alcohol as a factor in presentation.

Both police and health data suggest a need to target drinking to intoxication. Locally police have improved policing of licensed premises, and licensees do not want intoxicated people on their premises. However, greater enforcement of licensed premises (such as the Alcohol Linking Program[31]) may drive intoxication back to residences[32]. Drinking at home was once a common risk factor in this area.

Outcome evaluation can be designed to incorporate health and police data that is comparable across time and place

These data sources are available over time and can be compared with similar communities. For example, health data and alcohol sales data have been used to monitor long-term community programs in Geraldton[33], a regional community in Western Australia.

Policing of licensed premises

This pilot study was too short to suggest that a police walk-through of licensed premises would reduce *Liquor Act* breaches by staff or patrons, or reduce reactive police work. In fact, breaches of the Act are most likely to be identified by specially trained police with comprehensive knowledge of relevant legislation and appropriate experience.

Limitations in the data collected and lessons learnt

The major limitation of the present study is uncertainty of the accuracy of health and police data. The literature has shown that a medical record review may substantially underestimate alcohol-related ED presentations[25,34]. The present study found that only 17 of the 32 alcohol presentations were identified in the nurse assessment. This was one reason to include the self-report survey, shown as a more reliable indicator of alcohol consumption[22,35]. However the low survey response rate could have been predicted by ED nursing staff and manager, who knew that patients are reluctant to complete even the mandatory ED registration form. A budget that permitted the employment of trained interviewers may have improved the response rate, especially to the four injury questions, and may have identified more drinkers or those injured by drinkers. The amount of alcohol consumed is likely to be underestimated[36], even with the inclusion of a standard drinks guide. Poor coherence in intoxicated people also acts against ED interventions.

Although agreed to by ED staff, a tally of patients who were ineligible or who refused to participate was poorly kept and therefore not analysed. This was a source of bias, although respondents who refused to participate due to intoxication should have had alcohol use noted in the nurse assessment. Relying on ED staff to administer the survey also limited the study period to 2 weeks. Greater completeness and ease of analysis would be enhanced by an alcohol field (as the police data has) but this may not be welcomed by staff.

No return visits to ED, medical reviews, ongoing investigations by detectives, or court time of the police in the study period or subsequent weeks were included. Inclusion of such factors may have altered some outcomes. However, while the number of ED presentations, reactive incidents identified and police time recorded may have been increased, proactive records would not have changed.

The demography for all alcohol-related policing events was incomplete because CIDS documentation, often involving

large numbers of intoxicated people, is limited. The local data suggest that assault is under-reported. Other inconsistencies were noted, for example a person who presented to the ED with assault-related injuries without mention of alcohol involvement had earlier in the same evening been reported by police for driving while under the influence of alcohol.

Conclusion

This pilot study illustrates the potential for local data collection and integration. Future research would benefit with the use of project officers in ED[16] and in police, to improve compliance and data completeness. A more comprehensive local picture would include data from other agencies dealing with alcohol. NSW Ambulance was approached but time constraints precluded their involvement. A longer study is necessary to confirm the preliminary data on seasonal variation.

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