



Short Communication

Alcohol-related emergency department presentations and hospital admissions around the time of minimum unit pricing in Ireland

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ABSTRACT

Background: Minimum unit pricing (MUP) was recently introduced in Ireland to reduce alcohol-related harms. The size of the impact of alcohol on hospital emergency departments (EDs) in Ireland is poorly understood due to inconsistent alcohol screening and documentation.

Aims: We sought to systematically characterise the volume, timing, and nature of alcohol-related presentations and admissions to a busy urban ED in Dublin, Ireland.

Method: Patients presenting to the ED were assessed by a dedicated clinician during selected time periods before (Nov–Dec 2021) and after (Feb–Apr 2022) the introduction of MUP. A total of 725 interviews were conducted over 168 h in the ED.

Findings: Alcohol consumption was a factor in 19.4% of ED presentations and in 17.3% of hospital admissions across the entire study period. A reduction in overall alcohol-related ED presentations was noted in the period following MUP, although it is not possible to conclude a direct effect.

Conclusion: Alcohol-related harm places a significant strain on EDs and hospitals, and the impact of MUP on hospital burden in Ireland merits further evaluation. Effective measures at local and population levels are urgently required to address this burden.

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Introduction

Alcohol-related hospital discharges in Ireland is estimated to cost €1.5 billion annually or 7% of the annual healthcare budget.¹ This cost estimate accounts for alcohol-related hospital stays but not alcohol-related emergency department (ED) presentations. This is because in Ireland alcohol harms are not monitored due to inadequate systematic coding of alcohol data; however, data from a retrospective (snapshot) review of all 24-h EDs in Ireland found that approximately 6% of ED presentations were alcohol-related.² This lack of routine alcohol data impedes efforts to secure dedicated resources to reduce the burden of alcohol in the ED.

In an effort to reduce population-level harm from alcohol in Ireland, minimum unit pricing (MUP) was introduced at €1.00 per 10 g of alcohol via the Public Health (Alcohol) Act 2018 on 04

January 2022. MUP sets a legally required alcohol floor price, effectively removing the cheapest beverages from the market. A systematic review of MUP on hospital burden reported that natural experiments were consistent with modelling studies that MUP led to a reduced alcohol-related burden on hospitals.³ Recent natural experiments have found a significant reduction in alcohol-related hospital admissions from MUP, but not ED presentations, ambulance call-outs, or acute medical reviews.^{4–7}

The purpose of this service evaluation was to systematically evaluate the burden of alcohol on ED presentations and hospital admissions, with assessments taking place both before and after the introduction of MUP.

Methods

This service evaluation was conducted at Beaumont Hospital, Dublin, serving a catchment population of 290,000 persons in the North Dublin region comprised of high deprivation rates and complex social needs.

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The evaluation was undertaken by a single clinician (TM) stationed in the ED for 168 h in order to comprehensively screen and gather data on alcohol-related presentations. The study was conducted over 2 weeks in each period (Period 1: 8th–15th November + 28th November–4th December 2021 and Period 2: 28th February–7th March + 3rd–9th April 2022) which were chosen as being free of major national holidays and COVID-19 restrictions, and these periods had no changes to hospital admission policy locally or non-MUP alcohol policies nationally. The aggregated evaluations were reflective of a timespan of 16:00 to 04:00 before (Period 1) and after (Period 2) MUP.

All ED attendances were eligible, and interview questions included a brief clinical history, preferred alcoholic beverage, and the administration of the Alcohol Use Disorders Identification Test (AUDIT-C) alcohol questionnaire (a validated alcohol-screening tool whereby a score of ≥ 5 identifies likely hazardous drinking over the preceding year).

Each presentation was determined to be alcohol-related or not by cross-referencing the working clinical diagnosis with published alcohol-related International Classification of Diseases (ICD-10) codes ([Supplementary Table S1](#)). Alcohol-attributable conditions can be divided into acute and chronic, and wholly attributable and partially attributable. These are explained as follows:

- “Acute wholly related” conditions are purely driven by recent or ongoing alcohol misuse, e.g., alcohol intoxication or poisoning.
- “Acute partially related” includes conditions such as acute injuries and deliberate self-harm, whereby alcohol was a factor in causing the harm e.g. an injured pedestrian due to an intoxicated driver, or an individual with an injury due to an intoxicated state.
- “Chronic wholly related” includes conditions overtly due to longer term alcohol misuse such as alcohol-related liver disease or alcoholic gastritis.
- “Chronic partially related” conditions are listed in [Supplemental Table S1](#) and must have had an AUDIT-C score of ≥ 5 to qualify.

Data were analysed using Stata (StataCorp) version 16. A two-sample proportion test with a 95% confidence interval was used to calculate the difference in proportions, with a two-tailed P value ≤ 0.05 determining statistical significance. This service evaluation was approved by the hospital's audit (CA770) and Research and Ethics Committee (REC: 21/92). All data were anonymised at source, and verbal consent to opt in to interview was obtained.

Results

A total of 970 patients attended the ED during the study. Missing data were made up of patients who did not wait to be seen, could not be located, were too unwell, or declined to interview. A total of 725 patients were interviewed (364 Period 1 and 361 Period 2), representing 73% of the study population captured ([Fig. 1](#)).

Missing data

Although missed cases lacked interview data, we retrospectively examined all ED presentations and missed hospital admissions to investigate for alcohol harms. We found four cases which would have been flagged as alcohol-related, had they been included (three in Period 1 and one in Period 2). There was a low volume of overt alcohol harms in the missing data; however, without interview data, the overall alcohol burden in the missing data is uncertain. Detailed tables of missing cases can be seen in [Supplementary Tables S2 and S3](#).

Baseline characteristics

In the study sample, 53.8% of participants were female, and the median age was 49 years (interquartile range [IQR]: 32–70). There were more male alcohol-related presentations than female (63.1% versus 36.9%; $P < 0.001$), and the age group 40–50 years was more associated with alcohol-related ED presentations compared to other age groups ($P < 0.01$). Overall population median AUDIT-C score was 3 (IQR: 0–7), and alcohol-related median AUDIT-C score was 9 (IQR: 6–11).

There were no patterns of alcohol-related presentations to the ED by time or weekday; however, peaks were observed for specific weekdays for “wholly alcohol-related” (Thursdays and Saturdays), “acute injuries” (Saturdays), and “mental health queries” (Thursdays and Fridays). The most common alcohol-related presenting complaints were “acute injuries” (32.6%), “chest complaints” (19.1%), and “mental health queries” (16.3%).

The preferred alcoholic beverages were beer (40.5%), wine (24.0%), overall spirits (20.0%), no specific preference (3.5%), cider (2.9%), and alcopops (2.0%). There were no significant differences between beverage preferences in Periods 1 and 2.

Tables of baseline characteristics and graphs characterising alcohol-related ED presentations are presented in [Supplementary Table S4](#) and [Figs. S1–S11](#).

Alcohol-related ED presentations and admissions

Alcohol was a factor in 19.4% of all ED presentations, and 63.1% of participants were male. There were 6.7% fewer presentations between Periods 1 and 2 (22.8% versus 16.1%; $P = 0.02$), and clinical information of these alcohol-related presentations by study periods can be seen in [Supplementary Tables S5 and S6](#).

“Acute wholly related” presentations increased 19.8% between the periods ($P = 0.002$), and this subgroup comprised the highest-risk individuals with median AUDIT-C 11 in Period 1 and AUDIT-C 12 in Period 2. In Period 1, there were 5 cases of alcohol intoxication, and in Period 2, there were 14 cases of alcohol intoxication and 1 case of alcohol withdrawal ([Supplementary Table S7](#)).

Overall, 17.3% of all admissions from the ED were alcohol-related. There were 5.7% fewer alcohol-related admissions between Periods 1 and 2; however, this did not reach statistical significance (19.7% versus 14.0%; $P = 0.26$) ([Table 1](#)).

Alcohol-related admissions were made up of 69.2% males and an overall median AUDIT-C score of 8 (IQR: 5, 10). The most common alcohol-related admissions were “acute injuries” (8.5%), “gastrointestinal complaints” (4.3%), and “chest discomfort” (3.5%).

Discussion

Burden of alcohol

Both independent periods showed a considerable burden of alcohol-related presentations and admissions. Overall, as many as 1 in 5 (19.4%) ED presentations and 1 in 6 (17.3%) hospital admissions were alcohol-related. Moreover, 1 in 30 (3.1%) ED admissions were wholly attributable to alcohol consumption, representing a significant burden as a direct consequence of alcohol.

Although there was a reduction in overall alcohol-related presentations, we observed a significant increase in acute wholly related presentations, and this subgroup represented individuals with alcohol dependence ([Supplementary Table S7](#)). The reason for an increase in acute wholly related presentations such as alcohol

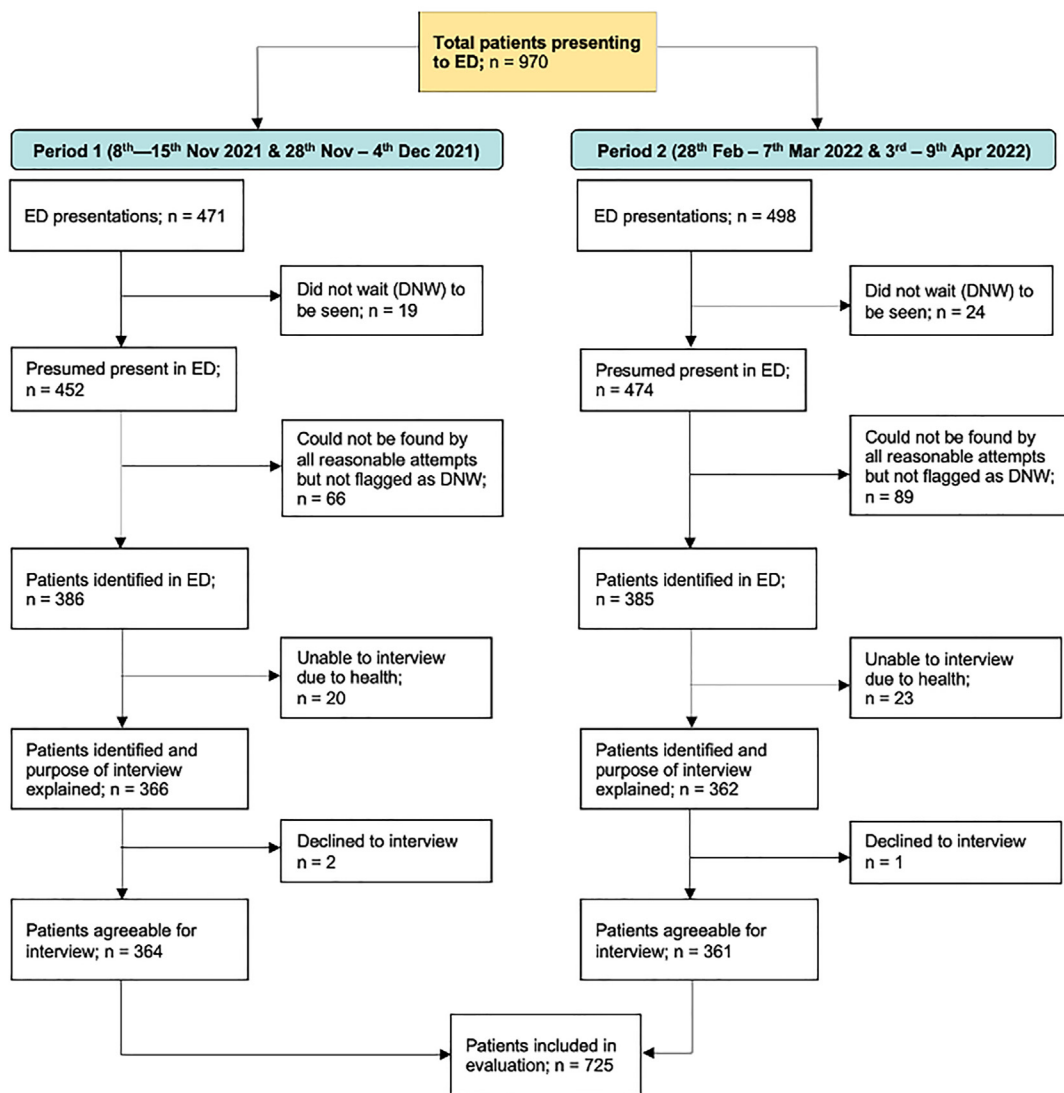


Fig. 1. Patient involvement flowchart of missing data and patients included in this service evaluation.

Table 1
Proportion of alcohol-related presentations and admissions by time periods.

Category	Total	Period 1 (8th Nov – 15th Nov 2021 and 28th Nov – 4th Dec 2021)	Period 2 (28th Feb – 7th Mar 2022 and 3rd Apr – 9th Apr 2022)	Percentage difference [95% CI]	P value
Baseline presentations	n = 725 (%)	n = 364 (%)	n = 361 (%)		
Alcohol-related presentations	141 (19.4)	83 (22.8)	58 (16.1)	–6.7% [–12.5, –1.0]	0.02
Subgroups^a					
Male alcohol-related	89 (63.1)	54 (65.1)	35 (60.3)	–4.7% [–21.0, +11.5]	0.57
Acute wholly related	20 (14.2)	5 (6.0)	15 (25.9)	+19.8% [+7.5, +32.2]	0.001
Acute partially related	60 (42.6)	40 (48.2)	20 (34.5)	–13.7% [–30.0, +2.6]	0.11
Chronic wholly related	0 (0)	0 (0)	0 (0)	–	–
Chronic partially related	61 (43.3)	38 (45.8)	23 (39.7)	–6.1% [–22.7, +10.4]	0.47
Baseline admissions	n = 225 (%)	n = 132 (%)	n = 93 (%)		
alcohol-related admissions	39 (17.3)	26 (19.7)	13 (14.0)	–5.7% [–15.5, +4.1]	0.26
Subgroups^b					
Male alcohol-related	27 (69.2)	20 (76.9)	7 (53.8)	–23.1% [–54.6, +8.5]	0.14
Acute partially related	13 (33.3)	9 (34.6)	4 (30.8)	–3.8% [–34.9, +27.2]	1.00
Chronic wholly related	0 (0)	0 (0)	0 (0)	–	–
Chronic partially related	22 (56.4)	15 (57.7)	7 (53.9)	–3.8% [–3.7, +29.2]	0.82

Abbreviation: CI = confidence interval.

^a Subgroup proportions of alcohol-related presentations.

^b Subgroup proportions of alcohol-related admissions.

intoxication or poisoning during Period 2 is unclear, but it could be related to factors noted in the Scottish evaluation of MUP in which the introduction of MUP was associated with reduced household expenditure on food with increased availability of funds for alcohol or switching to consuming more spirits amongst persons with alcohol dependence.⁸

Alcohol policy

The availability of alcohol in Ireland is managed through licencing legislation, which at the time of writing is going through a process of legislative reform. International systematic reviews consistently find that greater temporal and physical availability of alcohol is associated with an increased burden of harm.⁹ MUP was introduced during the course of our study between Periods 1 and 2, and we observed a significant reduction for overall alcohol-related ED presentations of -6.7% ($P = 0.02$). However, in a larger multi-site study of the impact of MUP on ED presentations in Scotland (MUP introduced) and England (MUP not introduced), there was no evidence of a beneficial impact. It evaluated ED presentations over 4–10 months post MUP, involved a MUP of €0.50 per unit of alcohol in Scotland (lower than that in Ireland) and had higher rates of participants declining to interview, which may have influenced their findings.⁵ Similarly, no impact of MUP was found on alcohol-related ambulance call-outs, many of which, would have resulted in ED presentations.⁶

Our study did not observe any significant change for alcohol-related hospital admissions; however, the sample size for this subgroup was small ($n = 39$, or 5% of total study cohort). A systematic review of MUP and alcohol-related hospital burden suggested that acute alcohol-related admissions would show benefit immediately following MUP,³ and a robust natural experiment in Scotland (lower MUP threshold than in Ireland) found that chronic wholly attributable hospitalisations decreased by -7.3% ($P < 0.001$) as a result of the introduction of MUP.⁴

Overall, there was no significant difference in the choice of beverage for those presenting to the ED; however, purchasing behaviours are multifactorial, and without qualitative information on access to types of beverages, budget and expenditures, or personal preference, it is difficult to conclude why there was no significant change in beverage preference.

Dedicated services for alcohol harms

Our findings primarily highlight the significant burden of alcohol in the ED and urgently calls for dedicated, specialist resources in EDs to address the burden of alcohol. One such example is an “alcohol-care team (ACT)”, which is a clinician-led multidisciplinary team with integrated alcohol treatment pathways collaborating across hospitals, primary care, and community care. In the UK, ACTs have had benefits in reducing acute hospital admissions, readmissions, and mortality from alcohol in a cost-effective manner.¹⁰ Despite these benefits, ACTs are yet to be supported in Ireland. There may be a case for combining these local dedicated services with effective alcohol policies to tackle the enormous alcohol-related burden in hospitals.

Strengths and limitations

A strength of this evaluation was the systematic and detailed approach to case screening and assessment by an experienced clinician to overcome the suboptimal clinical coding of alcohol-related harms in ED presentations. The use of verbal consent and anonymization of data at source enabled high participation, minimising the bias that often arises in alcohol studies from fear of stigma or having alcohol screening documented in medical records.

However, this study did not include directly comparable periods before and after MUP or a control hospital in a jurisdiction without MUP. It also did not address potential seasonality of alcohol presentations to the ED, and it was not possible to blind data collection in periods. Although this study offers valuable insight into alcohol-related hospital burden, it can only contribute to hypothesis generation regarding the potential impact of MUP in Ireland.

Conclusion

There is a significant burden of alcohol-related harm in ED presentations and hospital admissions. Specialist ACTs offer benefits locally, and health policies such as minimum pricing are undergoing real-world evaluations to determine if their success in reducing alcohol consumption translates into reductions in healthcare burden.

Author statements

Ethical approval

This service evaluation was approved by the hospital's audit (CA770) and Research and Ethics Committee (REC: 21/92). All data were anonymised at source, and verbal consent to opt in to interview was obtained.

Funding

The Institute of Public Health (IPH) and the Health Service Executive (HSE) in Ireland provided funding for a clinical research fellowship for TM. Funding sources had no involvement in this study.

Competing interests

None to declare.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhe.2023.11.016>.

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