Intended and unintended consequences of the implementation of minimum unit pricing of alcohol in Scotland: a natural experiment

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Disclaimer: This report contains transcripts of interviews conducted in the course of the research and contains language that may offend some readers.

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Scientific summary

Consequences of minimum unit pricing of alcohol

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Scientific summary

Background

Alcohol accounts for 2.8 million deaths every year, which was approximately 10% of all deaths worldwide in 2016. Scotland has a history of excessive alcohol-related harms, which is reflected in a steeper increase in mortality, in the 1990s to the mid-2000s, from alcoholic liver disease compared with England and Western Europe. As consumption of alcohol within a population is inversely correlated with its affordability, price increases are likely to reduce harms. This was the context for the proposal of minimum unit pricing (MUP) for alcohol.

Minimum unit pricing is a minimum retail price per unit of pure alcohol, increasing the price of low-cost alcohol. The poorest and most vulnerable are most at risk of harm from alcohol consumption and tend to consume such cheap alcohol; therefore, MUP would be of greater benefit to them than other drinkers. Following prior consultation, MUP was set at £0.50 per unit (1 unit = 8 g pure ethanol) for implementation in Scotland in 2018, even though this was the indicative level suggested when the legislation was passed in 2012 before legal challenges caused delays.

This study is part of a comprehensive evaluation programme co-ordinated by Public Health Scotland, which will inform the Scottish Parliament's vote on whether or not to continue with MUP after a 6-year period.

The three components of the study are described below.

Objectives

Emergency departments component

The emergency department (ED) component aimed to gauge the impact of MUP on alcohol-related harms and drinking patterns overall and for subgroups of interest (i.e. age, sex and deprivation). The primary aim was to assess the impact of MUP on alcohol-related ED attendance. The secondary outcomes were:

- variations in the type of alcohol-related harm
- rates of alcohol misuse measured by the Fast Alcohol Screening Test (FAST)
- mean FAST score
- binge drinking at least weekly in the last year.

Sexual health clinics component

The sexual health clinics (SHCs) study's primary aim was to measure change in the proportion of all respondents using any illicit psychoactive drug other than alcohol in the last month. Secondary outcomes were changes in:

- sources of alcohol purchases (on-licensed premises and off-licence premises)
- use of individual illicit psychoactive drugs other than alcohol
- alcohol misuse measured by the FAST
- binge drinking.

Communities component

Stakeholder interviews aimed to characterise the implementation process within study communities from differing professional perspectives and explored perceived impacts and adequacy of implementation, including any difficulties experienced.

Focus groups with young people and heavy drinkers aimed to explore participants' expectations, experiences and understanding of the policy and its impacts, including any unintended consequences and the mechanisms leading to any impacts.

Methods

As Scotland implemented MUP and England did not, this provided a controlled natural experiment as the best available design through quantitative difference-in-difference (DiD) comparisons. Our qualitative component compared affluent with deprived communities within Scotland.

Emergency departments component

We recruited one large hospital with an ED in each of four cities, comprising two pairs of hospitals of comparable population size, culture and drinking patterns. Edinburgh and Glasgow were exposed to MUP in Scotland, whereas Sheffield and Liverpool in the north of England were unexposed. Data collection, including a pre-MUP baseline, took place over three 3-week waves. The baseline was in February 2018, followed by two post-implementation follow-ups in September/October 2018 and February 2019. In each wave, data collection took place between 20.00 and 03.30 from Thursday to Sunday, and 09.00 and 16.30 from Monday to Wednesday.

Trained research nurse interviewers considered approaching all attendees aged > 16 years. We had access to hospital data for all attendees, enabling us to calculate the proportion approached. The reasons for not approaching, and the sex and age group of the attendees, were recorded by interviewers. Potential participants were given written information about the component and had up to 40 minutes to decide whether or not to take part.

We evaluated the impact of the implementation of MUP by fitting fixed-effects regression models.

Sexual health clinics component

We recruited one SHC in each of six cities that were approximately matched for populations size, three exposed to MUP (Edinburgh, Dundee and Glasgow) and three unexposed in the north of England (Manchester, Sheffield and Leeds). Trained data collection staff provided information to attendees about the self-completion survey before each wave.

For both quantitative components, we used DiD methods to estimate odds ratios (ORs) for outcomes based on proportions and an estimate of the mean for the FAST score, and tested for potential effect modifiers. We used logistic regression for binary outcomes and linear regression for the FAST score. We investigated the possibility of differential intervention effects and stratified analyses where appropriate.

Communities component

Qualitative accounts of participants' experiences and views of the policy were gathered using interviews and focus groups supported by semistructured topic guides. The data were gathered in three communities in Scotland (an affluent urban community and two deprived urban communities).

Stakeholder study

Aiming to provide in-depth insights into key stakeholders' experiences and observations of the social, health and economic impacts of MUP, we conducted one-to-one, paired or small group baseline interviews with 25 professional stakeholders in January to April 2018. These were repeated for 21 participants in September to November 2018.

The interviews were coded by two researchers independently.

Young people and heavy drinkers study

Twenty-four focus groups were conducted with subgroups of particular policy interest, that is young binge drinkers (aged 18–24 years) and older heavy drinkers (aged 30–55 years) identified using a questionnaire scale called AUDIT-C (Alcohol use Disorders Identification Test Consumption) ($n = 105$). Focus group discussions covered social norms and attitudes, alcohol displacement behaviours and changing patterns in drinking and purchasing habits. Twelve initial groups were conducted 1–2 months pre implementation and 12 follow-up groups were conducted 5–6 months post implementation of MUP policy. Some participants in later focus groups had also participated in earlier groups, meaning that there was an element of longitudinal design.

Results

Emergency departments

A total of 26,969 attendees aged at least 16 years visited the EDs during the three periods and 23,455 (87%) were recorded by nurse interviewers. We considered all recorded attendees in the analytic sample for the primary outcome.

On average, Scotland had a higher proportion of alcohol-related attendance than England. Scotland had a stable trend, whereas there was a decreasing trend in England.

The DiD estimates from the regression models for our primary outcome and nine secondary outcomes showed no significant differences in any of the outcomes after the introduction of MUP in Scotland. The OR for an alcohol-related attendance associated with MUP was 1.14 [95% confidence interval (CI) 0.90 to 1.44]. Similar results were observed for the secondary outcomes.

Sexual health clinics

There were 15,218 participants (56% of eligible attendees). Responses decreased over the three waves from 5607 (60%) responses in wave 1 to 4945 (54%) responses in wave 3. The response by site and wave ranged from 31% to 82%. The sample was younger, had a higher proportion of females, was better educated and contained a higher proportion of students than the general population.

For the primary outcome, the general trend across waves was for an increase in the proportion consuming drugs in the last month. There was a steeper increase across waves in Scotland (vs. England). However, the DiD estimates comparing pre with post MUP showed no evidence that illicit drug consumption had changed in our sample (OR 1.04, 95% CI 0.88 to 1.24).

The proportion of 'current alcohol drinkers' was higher in Scotland than in England, with this difference significant across all three waves. For drinkers' consumption, there were slight increases for the odds of alcohol misuse (FAST score ≥ 3; OR 1.22, 95% CI 1.04 to 1.42) and alcohol purchase from on-licensed premises (OR 1.27, 95% CI 1.05 to 1.55).

Communities

Stakeholders

Availability, purchasing and consumption

For the availability, purchasing and consumption of alcohol, stakeholders expected to see reductions after MUP, notably for young people because they had limited disposable income. Such reductions were not generally observed. Where consumption had reduced, it was not obviously caused by the introduction of MUP.

Health
Stakeholders anticipated that health outcomes would improve over the long term for the population. Others felt that the size of the reduction in alcohol consumption needed to have an effect on the health of a dependent drinker would be too large to be driven by the £0.50 MUP. A minority saw health improvements, but others anticipated short-term harms occurring, such as alcohol withdrawal effects, effects on mental well-being and an increased burden on services.

Crime conflict and social issues
Stakeholders reported perceiving no change in crime and social issues.

Alternative substances and sources of alcohol
Post MUP, no displacement to alternative sources of alcohol or drugs were observed, including cross-border sales.

Economic impacts
It was widely observed that independent retailers had benefited economically from MUP. However, some smaller retailers who were unprepared for MUP found themselves temporarily overstocked with some affected low-cost products.

Young people and heavy drinkers

Drinking patterns and purchasing behaviour
Overall, participants reported a longstanding pattern of greater consumption at weekends. Young people reported more purchases in the on-trade than older drinkers who were more likely to say that they drank at home or in an on-licence setting when dining out or attending an event.

Awareness, knowledge and understanding of the policy
Most participants had heard of MUP, but understanding varied within an overall sense of the policy as one that aimed to restrict demand for cheap alcohol through increased price. There was a view that MUP aimed to reduce street drinking by underage and homeless dependent drinkers.

The level of support for and attitudes to the policy
There were two factors affecting support: (1) its effectiveness in curbing excessive drinking by others and (2) its effect on the prices of products that were regularly consumed by respondents. The perceived effectiveness was greater for reducing underage drinking and so there was more support for this than for MUP as a means of tackling alcohol dependence.

The perceived impact of the policy
There was low perception of price change and the slight changes seen were not perceived to have had any impact on consumption. Concerns among disadvantaged communities about price increases remained after implementation, with fears about consequences for dependent drinkers; however, others were relieved that on-trade prices had not increased as they had expected.

Discussion

Main results
In EDs, we found no evidence of MUP having an impact on alcohol-related attendances or alcohol consumption among participants after 1 year. We similarly found no conclusive evidence of MUP having differential effects across socioeconomic groups.

In SHCs, we found no evidence of an unintended effect of MUP on illicit drug use.

The pre-implementation stakeholder interviews highlighted concerns about possible negative outcomes, including negative impacts of MUP on dependent and low-income drinkers, and harmful impacts of MUP on public services, such as policing and health care. However, many of these anticipated concerns did not materialise and the introduction of MUP was reported to have been unproblematic.

The focus group participants tended to discuss the impact of MUP on consumers of white cider with little appreciation of the potential for impact on other drinkers. Respondents' poor understanding of alcohol units contributed to an inability to understand fully how MUP worked. MUP appears to have interfered minimally with the market.

Strengths and limitations

The strengths of the ED component included triangulation of outcomes using diagnostic data analysis for attendances and there was no differential non-response across waves or between Scotland and England. For both ED and SHC components, we collected baseline data before the introduction of MUP, provided thorough training for staff conducting interviews, and synchronised data collection across sites. The limitations include that our definition of alcohol-related attendances for the ED component was partly based on nurse researcher observation, we had to exclude one hospital in England from the alcohol-related diagnosis analysis and there was variable weather at baseline and final data collection, although similar across countries, which may have had an impact on ED attendances. In the SHC component, the response rate varied across waves, resulting in differences in age/sex distributions across waves, which may have generated selection biases. With only one wave pre implementation in both the ED and the SHC studies, we were unable to test the assumption of parallel trends, meaning that we are uncertain how comparable the chosen cities in Scotland and England were. Purposive sampling ensured that a broad range of stakeholder groups was represented and focus groups were chosen to ensure the representation of key population subgroups. A longitudinal design meant that the views of stakeholders and at-risk heavy drinkers from before implementation of MUP were not subject to recall bias. However, it was not possible to determine if any perceived or observed changes among people in Scotland were due to MUP.

Relationship to the wider research context

Our study should be interpreted in the context of other studies in the MUP evaluation programme that have shown effects of MUP on alcohol purchases and sales. Alcohol purchases and sales are considered good proxies for overall consumption; however, they provide little information regarding changes in distribution within the overall population.

Interpretation

One possible explanation for our findings is that effects were obscured by selection biases unique to each setting. Generally, SHC attendees are younger and better educated than average, and are, self-evidently, in contact with other people. However, at EDs, our data suggested that there were more older people suffering alcohol-related accidents or other acute alcohol-related incidents who were less likely to be available for interview because of severity of intoxication or illness. Dependent drinkers are less likely to be well represented in SHCs and also more likely to suffer severe incidents, such as losing consciousness, having seizures or suffering acute withdrawal symptoms. It is possible that the introduction of MUP at a level of £0.50 was too low to produce a measurable population impact on ED or SHC attendees.

Conclusions

The general lack of evidence of health effects found in the ED and SHC settings concurs with the lack of perceived price increases and marginal consumption effects reported in the communities. Given the lack of effect and problem-free implementation also apparent from the qualitative studies,

this suggests that the floor price set for MUP may have been too low to make a difference that was detectable using these methods. The project findings suggest that the introductory unit price of £0.50 was not at a level to have a substantial impact on health.

Our evaluation, which itself contains multiple components, is part of a wider programme co-ordinated by Public Health Scotland (formerly NHS Health Scotland) and should be understood in the context of those results.

Trial registration

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