Health Equity Pilot Project (HEPP)

Modelling the impact of Minimum Unit Price for alcohol

Case Study

HEPP CASE STUDY

Title of Project/Policy
Modelling the impact of Minimum Unit Price for alcohol

Policy Reference
Alcohol (Minimum Pricing) (Scotland) Act 2012

Country
Scotland

Type of case study
Modelling

Thematic/sector focus
Alcohol

Date(s)
2015

Case study overview / About the project/policy:

This case study details modelling work conducted in Scotland to appraise the potential impact of a Minimum Unit Pricing policy, which is due to be implemented in Scotland on 1st May 2018. Minimum Unit Pricing sets a price for a unit of alcohol/ethanol [10ml or 8g of pure alcohol] under which alcohol cannot be sold.

In 2009, the Scottish Government launched a new strategic approach to tackle alcohol misuse[1]. The strategy stressed that increases in the consumption of alcohol among the Scottish population were leading to rises in alcohol-related harm. At that time, there were more than 40,000 hospital discharges in Scotland due to alcohol related causes each year and large increases in chronic liver disease, cirrhosis and alcohol-related mortality had been reported over recent years[1]. Alcohol-related morbidity and mortality was around six times higher among people who lived in the most deprived communities compared to those in the most affluent areas[2]. Furthermore, the misuse of alcohol was estimated to be costing Scotland £3.6 billion every year[2].

Minimum Unit Pricing was proposed as a method of reducing alcohol-related harm at a population level, improving public health and gaining social benefits. This particular policy was favoured over other forms of

price intervention. In part, this was because of its potential to impact specifically on the consumption of alcohol by harmful drinkers; those who were more likely to drink cheap alcohol and therefore disproportionately affected by alcohol-related morbidity and mortality[3]. The Alcohol (Minimum Pricing) (Scotland) Act 2012 was passed in 2012 and specified that all alcohol sold through licensed premises in Scotland could not be sold below a certain price depending on the amount of alcohol in the product. A price of 50p per unit of alcohol/ethanol (10ml or 8g of pure alcohol) was proposed. A business and regulatory impact assessment for minimum price per unit of alcohol was developed, which identified the potential costs and benefits associated with setting a minimum price of 50p per unit, including potential health benefits for those on low incomes[4].

In order to appraise the potential impact of introducing MUP policy, the Scottish Government sought the expertise of the Sheffield Alcohol Policy Unit, who had developed a model of minimum unit pricing and other alcohol taxation policies based on data for England. The model was adapted using data for Scotland, initially in 2009, and a series of updated models followed in 2010 and 2012. In 2015, following further development of model methodology that would allow for comparisons across different socio-economic groups, the Scottish Government commissioned an updated version of the model for Scotland. The objectives were to appraise MUP alongside other taxation policies and across different population groups based on income and level of alcohol consumption[5]. The model sought to explore the impact of these potential policies on alcohol prices, levels and patterns of alcohol use in on-trade and off-trade premises, revenue for retailers and the exchequer and alcohol-related health outcomes[5]. This case study focuses on the 2015 modelling work and its effects on health inequalities in alcohol-related harm.

1. Theoretical model and evidence base

The risks of alcohol-related ill health are greatest among heavier consumers of alcohol[6] such as hazardous and harmful drinkers. While Minimum Unit Pricing is a universal policy, and is intended to have a population-wide impact, its other main intended use in Scotland aimed to reduce alcohol consumption among harmful and hazardous drinkers specifically by increasing the price of cheap or heavily discounted alcohol. Those that consume large quantities of cheap alcohol, such as hazardous and harmful drinkers, will be more affected by the increases in price imposed by MUP policy than those that consume less. International studies suggest that alcohol consumption is associated

with the price of alcohol, and that increases in price can reduce demand[7].

Definitions
Hazardous use of drinking: A pattern of alcohol use that increases the risk of harmful consequences for the user (World Health Organization definition).
Harmful use of alcohol: A pattern of alcohol use that causes damage to physical or mental health, while often also having negative social consequences (World Health Organization definition)

2. Relevance of MUP

Minimum Unit Pricing has the potential to impact on health inequalities as those on lower incomes are typically more sensitive to price changes. In addition, alcohol consumers in deprived communities are more likely to experience alcohol-related harms. Consequently, changes in drinking patterns resulting from price changes may have greater benefits in poorer communities.

3. Intervention characteristics

In 2015, the Sheffield Alcohol Policy Unit, based at the University of Sheffield, carried out modelling work to appraise the impact of a MUP of 30p, 40p, 50p, 60p and 70p and taxation interventions based on duty and VAT rates (the increase in taxation that would be needed across all alcoholic drinks to achieve the same level of reductions in alcohol-related harm estimated to be achieved by a MUP of 50p[5]). Two related models were used.

1) The first model estimated how a change in the price of alcoholic drinks would alter levels and patterns of consumption for different population subgroups.

"The pricing model uses a simulation framework based on classical econometrics. The fundamental concept is that (i) a current consumption dataset is held for the population; (ii) a policy gives rise to a change in price; (iii) a change in consumption is estimated from the price change using the price elasticity of demand; (iv) the consumption change is used to update the current consumption dataset"[5].

A number of measures were generated/used for the model:

a) Alcohol consumption levels (average weekly alcohol consumption) and **patterns of consumption** (units drunk on heaviest drinking day in last 7 days; proxy for binge drinking). This information was generated using data from the national Scottish Health Survey (SHS) carried out among adults in Scotland aged 16+, and estimates of alcohol by volume (ABV) for different beverage types from the market research company Nielsen. SHS data on income was used to define individuals in poverty (having an equivalised household income below 60% of the population median) and those not in poverty.

(Note: The Scottish Health Survey is an annual national survey that collects information about the health of the Scottish population in private households.
 http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey).

b) Price distributions (£ per unit) for a range of alcoholic beverages in on and off trade premises. This information was generated using data from the Living Costs and Food Survey (which included information on household income) and on and off trade sales data for Scotland.

(Note: The Living Costs and Food Survey is an annual national survey that collects information on spending patterns and the cost of living. https://www.ons.gov.uk/surveys/informationforhouseholdsandindividuals/householdandindividualsurveys/livingcostsandfoodsurveylcf).

c) Price elasticities of alcohol demand (% change in the demand for alcohol due to a 1% change in its price). Price elasticity estimates for a range of alcoholic beverages by population subgroups (including income) had been calculated for Great Britain for previous modelling work and were utilised further for this analysis of Scottish data.

The second model estimated how changes in levels and patterns of alcohol consumption would impact on alcohol-related morbidity, mortality and associated costs for different population subgroups (including socio-economic group).

"An epidemiological approach is used to model the relationship between consumption and harm, relating changes in the prevalence of alcohol consumption to changes in prevalence of risk of experiencing harmful outcomes. Risk functions relating alcohol consumption to level of risk (both of mortality and morbidity) are a fundamental component of this 'consumption to harm' model"[5].

The model included health conditions known to be partially or wholly attributed to alcohol consumption and took into consideration time lag effects, whereby some chronic conditions related to alcohol consumption may take many years to be realised. This model utilised:

a) **Number of deaths from alcohol-attributable conditions**, generated from Scottish mortality data. Data on socio-economic group was generated using the Index of Multiple Deprivation.

b) **The number of patients admitted to hospitals in Scotland for each alcohol-related condition**, generated from Scottish hospital admissions data. Data on socio-economic group was generated using the Index of Multiple Deprivation.

The modelling work had a number of strengths. The model frameworks were grounded in evidence from systematic reviews and literature reviews on the relationships between 1) alcohol price and consumption/alcohol-attributable harms, and 2) alcohol consumption and alcohol-attributable harms. They were based on national datasets and were detailed in nature, including the ability to estimate effects for those in poverty and not in poverty. Brennan et al[8] highlight limitations of the model (adapted for use with Scottish data) due to data and evidence gaps. These include:

- Price analyses is based on cross sectional purchasing data rather than longitudinal data recording of both alcohol consumption and purchase;
- Patterns of consumption (units used on heaviest day in last 7 days) is a proxy for binge drinking that would be better measured using frequency of heavy drinking and average consumption levels;
- National level datasets (such as Scottish Health Survey and the Living Costs and Food Survey) are prone to underreporting and underestimate levels of alcohol expenditure and consumption as well as under-represent certain population groups at risk of alcohol-attributable harm.

Methodology for the case study

This case study is based on findings from academic papers, formal reports and other grey literature. Information on the model and its effectiveness, as well as minimum pricing generally, was identified initially through a literature review completed during an earlier stage of this project. Background and contextual information was sought from NHS Health Scotland and Scottish Government, who provided links to evidence presented in Parliament and court proceedings for Minimum Unit Pricing legislation. Additional contextual information was identified through focused grey literature searches.

Results and key findings

The modelling work estimated that setting a MUP of 50p would[5]:
- **Reduce alcohol consumption** in Scotland by around 3.5% (equivalent to 26.3 units per drinker per year).
- **Reduce numbers of deaths and hospitalisations** (2,036 fewer deaths and 38,859 fewer hospitalisations during the first 20 years of its introduction).
- Have **greatest effects on harmful and hazardous drinkers**; alcohol consumption would be reduced by 7% (246.2 units per drinker per year) and 2.5% (35.5 units per drinker per year) among harmful and hazardous drinkers respectively. This compares to a 1.2% (3.7 units per drinker per year) reduction for moderate drinkers.
- Affect hazardous and harmful drinkers **living in poverty** the most (having an equivalised household income below 60% of the population median). For instance compared to those not in poverty, hazardous and harmful drinkers in poverty would experience:
  - **Greater reductions in alcohol consumption**. Hazardous and harmful drinkers on low incomes would reduce their alcohol consumption by 6.1% (88 units per person per year) and 15.1% (680 units per person per year) respectively, compared to 2.1% (30 units) and 5.4% (181 units) for equivalent drinkers not on low incomes.
  - **Greater reductions in alcohol-related mortality**. There would be an estimated 15.3% reduction in deaths (119 fewer deaths) among harmful drinkers on low incomes over the first 20 years of the policy, compared to a 4.4% reduction (16 fewer deaths) for those not on low incomes.
  - **Greater reductions in consumer spending on alcohol**. Consumer spending on alcohol would decrease by £88 per

year for harmful drinkers on low incomes, compared to increasing by £20 per year for those not on low incomes.

- Be more effective at **reducing alcohol-related health inequalities** than a 28% tax increase (the increase in taxation that would be needed across all alcoholic drinks to achieve the same level of reductions in alcohol-related harm estimated to be achieved by a MUP of 50p). This is because the MUP is better able to target those population groups most at risk of alcohol-related harm (harmful drinkers on low incomes).

The modelling work suggests that a MUP of 50p will help to reduce inequalities in health through targeting the heaviest drinkers, particularly those living in poverty. There have been concerns that MUP will cause greatest financial impact among those with the lowest incomes. The modelling work reported that among moderate drinkers, those in poverty would reduce their alcohol consumption by 4.1% compared with 0.8% of those not in poverty. However, the work also clarified that among those living in poverty, moderate drinkers would be much less affected than those drinking at hazardous and harmful levels. The health benefits that these individuals would gain from the policy would also be an important consideration. The modelling work was provided as evidence within UK Supreme Court proceedings in 2017, which ruled that the Scottish Government could legally set a minimum price for alcohol[9].

Timeliness / Interest from other Member States

Minimum Unit Pricing has recently been or is being considered in other countries within the UK (England, Wales, Northern Ireland) as well as other EU member states (e.g. Ireland, Estonia). Related policies that restrict the sale of low-cost alcohol are already in place in some EU countries (e.g. Belgium, Luxembourg and Poland[10]). The challenges surrounding the Scottish legislation for MUP is of relevance to member states considering MUP implementation. Within Scotland, legislation to introduce MUP was passed in 2012 (The Alcohol (Minimum Pricing) (Scotland) Act 2012). This was subsequently challenged in Scottish Courts by a number of alcohol trade associations on the basis that MUP would contravene EU law through restricting trade[11]. The case was referred to the European Court of Justice. Here, the preliminary ruling indicated the policy could be justifiable on the grounds of protecting health, provided that it was proportionate and more effective than alternative methods of protecting health such as a tax increase on alcoholic drinks[12]. The case was referred back to Scottish courts to make the final decision. In 2017, at the final court of appeal in the UK, the UK Supreme Court ruled that the Scottish Government could legally

set a minimum unit price for alcohol[9]. There are plans to implement the policy on 1 May 2018.

What makes this case study interesting/important?

Internationally, there have been few evaluations of minimum unit pricing policies in practice and none that have considered differential impacts across socio-economic groups. This modelling work offers a better understanding of how the introduction of MUP policy could impact on alcohol-related harm and health inequalities.

In Scotland and the EU generally, there has been considerable legal debate around whether MUP contravenes EU law (e.g. distorts price competition and trade) and whether taxation policies could offer the same benefits with less disadvantages for trade. For its part, the Scottish Government always acknowledged that MUP would impact on trade, but put forward the view that this was necessary in order to protect public health. The ability of the model to compare different MUP levels against taxation policy is important, since it suggests that at least in Scotland, MUP has the better potential for targeting population groups at greatest risk of alcohol-related harms and subsequently reducing health inequalities than other price policies. In 2017, the UK Supreme Court concluded that MUP would be most able to address problematic drinking and would have less of a financial impact on non-problematic drinkers[9].

Generalisability

Research from across the EU shows that consumers of alcohol with lower income/education experience greater levels of mortality from alcohol than their counterparts with higher income/education[13]. In addition, international research suggests that heavier drinkers are more likely to purchase cheaper forms of alcohol[14,15]. Minimum unit pricing is likely to have a similar effect on reducing consumption and harm in low income, heavy drinking populations in other EU countries to that seen in Scotland. Where similar modelling has been carried out elsewhere (Wales, Northern Ireland, England), the models suggest that greater reductions in alcohol-related harms will be experienced by those on low incomes compared to those not on low incomes[16-18].

Sustainability

A more complex form of minimum pricing of alcohol has been implemented in areas of Canada for over 20 years and have been effective in reducing overall and beverage specific levels of alcohol consumption[19].

Transferability to other countries

Minimum alcohol prices are implemented in some countries/regions outside of the EU, such as Canada[19]. MUP could potentially be implemented in EU member states. Modelling work such as that carried out in Scotland could help EU member states predict the impact of MUP in terms of reducing health inequalities. The model generated by the Sheffield Alcohol Research Group was developed initially with data from England, and in addition to the Scottish adaptations, has been adapted for use in Wales, Northern Ireland and the Republic of Ireland. Modelling work in other countries would depend on the availability of good quality datasets. As with Scottish attempts to take forward policy on MUP, considerations of implementation could be met with opposition from commercial interests.

Next steps/Recommendations

Following a number of legal challenges, the Scottish Government is now legally able to introduce MUP within Scotland and is progressing with its implementation, planned for 1 May 2018. A public consultation has taken place to establish how the public, businesses and other interested parties view the suggested minimum unit price of 50p[20]. An independent evaluation of the impact of minimum unit pricing is being developed and baseline data is being collected. In the meantime, further modelling work could be undertaken in other EU countries to identify the potential for MUP to reduce inequalities in alcohol-related harm in other contexts. This would leave countries in a strong position to implement MUP should the Scottish implementation validate findings from the models.

Initial conclusion

Although MUP could be considered regressive in terms of alcohol costing, the implementation of MUP would be a progressive policy in terms of its impact on harms to health. Thus, it is likely to reduce alcohol consumption and harms in those groups of the population that are currently most affected: hazardous and harmful drinkers on low incomes. It is likely therefore that introduction of MUP would reduce inequalities in alcohol-related harm in the longer term.

Sources of funding/sponsors for project/policy

The Scottish Government are responsible for the development of the legislation for MUP, and will be responsible for its subsequent implementation.

References/Studies/Respondents

The case study has been drafted by Sara Wood (Public Health Wales) and Professor Mark Bellis (Public Health Wales / Bangor University). Background and contextual information was sought from NHS Health Scotland and Scottish Government, who provided links to evidence presented in Parliament and court proceedings for Minimum Unit Pricing legislation.

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