CANADIAN ALCOHOL POLICY EVALUATION (CAPE) COMMUNITY OF PRACTICE

Social determinants of substance use and harm: existing trends and policy options

Event #21: February 7, 2024
SIMULTANEOUS FRENCH INTERPRETATION

Simultaneous French interpretation is available except for the Q&A portion / interprétation simultanée en français est disponible sauf pour la section Q&R (see Chat box for instructions)
We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the University of Victoria stands and the Songhees, Esquimalt and WŚÁNEĆ peoples whose historical relationships with the land continue to this day.
HOUSEKEEPING

- Today’s webinar includes a presentation and Q&A = 90mins
- The presentation segment will be recorded (not Q&A). Links to the recording and webinar slides will be emailed.
- We invite your feedback about today’s session. A survey link will be shared in the Chat box and via email.
- For persons with lived/living experience stipends, email capecopcoord@uvic.ca

The views and opinions expressed as part of this event are those of the presenters alone and do not necessarily represent those of our funders or other organizations acknowledged.
Q&A FORMAT

- Use chat box or Q&A tool to submit a question at any time.
- Use ‘raise hand’ during Q&A segment. The moderator will ask you to unmute to pose your question. Name the presenter to whom you are directing the question.
- The moderator may read aloud questions typed in the chat or Q&A tool.
- Technical difficulties? please message us in the chat.
PRESENTERS

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Postdoctoral Fellow
Institute for Mental Health Policy Research
Centre for Addiction and Mental Health
Social determinants of substance use and harm: Existing trends and policy options

Brendan Smith, PhD
CAPE CoP Webinar
February 7, 2024
Land Acknowledgment

• We acknowledge the land we are meeting on is the traditional territory of many nations including the Mississauga's of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. We also acknowledge that Toronto is covered by Treaty 13 of the Mississaugas of the Credit.
Acknowledgments

Co-Principal Applicant

• Erin Hobin

Co-authors

• Alessandra Andreacchi
• Claire Benny
• Samantha Forbes
• Naomi Schwartz
• Christine Warren
Socioeconomic position and alcohol harm

• Leading cause of death and disability in Canada and internationally
• Causes over 200 negative chronic and acute health harms\(^1\)
• Socioeconomic position is inversely associated with alcohol-attributable morbidity and mortality
  • Risk of alcohol-attributable mortality is **3.8- to 5.2-fold higher** in individuals with low compared to high socioeconomic position\(^2\)
Health impact of social position and social context

Health impact of social position and social context

SOCIETY

Context

Policy

INDIVIDUAL

A

Socioeconomic position

B

Differential exposure

Specific risk factor (e.g., alcohol use)

C

Health outcome (e.g., alcohol harm)

Differential vulnerability

Differential exposure to alcohol

• **Alcohol harm paradox:** Individuals with lower compared to higher socioeconomic position experience disproportionately greater alcohol-attributable harm despite similar or less alcohol use

  • Heavy episodic drinking (15% to 30%) and volume of alcohol use (−5% to 15%) explained little of observed inequities²

Potential mechanisms⁴:

• Individual or lifestyle risk factors (e.g., smoking, overweight/obesity)
• Contextual (e.g., social support, drinking contexts)
• Disadvantage (e.g., lifecourse exposures, material resources, access to healthcare)
• Upstream (e.g., structural, employment)
• Artifactual (e.g., measurement error, underreporting)
Differential vulnerability to alcohol

• Understudies mechanisms of social inequities in alcohol harm
• Effect of alcohol use differs across subpopulations
  • at the same level of alcohol use, do individuals with lower socioeconomic position experience more harm?
• Emerging evidence indicate a potential joint effect between low socioeconomic position and higher alcohol use
Objectives

• To estimate the sex/gender-specific joint effect of education and alcohol use (both heavy drinking and volume of alcohol use) on 100% alcohol-attributable hospitalization or death
**Data sources**

Canadian Community Health Survey (CCHS) linked to health administrative data

- **Hospitalization:**
  - Discharge Abstract Database (DAD, 1999-2017)
  - Ontario Mental Health Reporting System (OMHRS, 2006-2017)

- **Deaths:**
## Study population

<table>
<thead>
<tr>
<th>Alcohol-attributable hospitalizations or deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pooled 440,370 respondents from the 2000-2008 CCHS</td>
</tr>
</tbody>
</table>

Respondents were excluded if they were:

- from Quebec (n=88,900)
- from three territories and health regions where alcohol use module was not included (n=37,400)
- had a 100% alcohol-attributable hospitalization prior to CCHS interview (n=1,700)
- aged <15 or 65+ (n=65,900)
- pregnant or breastfeeding (n=5,600), missing primary exposures or covariates data (n=13,300) or lifetime alcohol abstainers (n=28,200)

**n= 95,545 men and 103,580 women**
Alcohol harm outcomes

- incident 100% alcohol-attributable hospitalization or death

Definition:

- based on Canadian Institute for Health Information’s indicator “Conditions Entirely Caused by Alcohol”
- identified using ICD-10 and DSM-5 diagnostic codes listed as the underlying or contributing cause
Socioeconomic position

• Operationalized using education:
  • less than high school
  • high school diploma/some post-secondary
  • trades or certificate below Bachelor’s degree
  • Bachelor’s degree or above

• Sensitivity analyses examined household income quintile
Self-report alcohol use

1. **Heavy (episodic) drinking** (yes/no):
   - binge drinking, consuming ≥5 standard drinks (13.45 grams of ethanol) on a single occasion, at least monthly in the past year

2. **Volume of alcohol use**:
   - number of standard drinks consumed in the past 7 days
   - risk groups: former consumer (no use in past year), low (≤2 drinks/week), medium (3-6 drinks/week), high (7-15 drinks/week), and excess risk (>15 drinks/week)
   - consistent with the continuum of risk in Canada’s Guidance on Alcohol and Health
Sex and gender

• Sex was measured based on respondent’s self-report to the question “is [respondent name] male or female”
  • ‘male’ and ‘female’ characterize biological constructs, although they likely capture both biological and sociocultural aspects when asked in this way

• We use the terms sex/gender, women and men to interpret both:
  • sex differences (e.g., females experience greater alcohol harm from similar volumes of alcohol use)
  • gender differences: (e.g., socially constructed roles, attitudes, expectations) are entangled in relation to alcohol use and harm
Covariates

• Potential confounders:
  • age (in years)
  • marital status
  • immigrant status (immigrant/non-immigrant)
  • province (categorical)
  • rurality (urban/rural defined as population concentration ≥1,000 and a population density ≥400km²)
  • survey cycle (categorical)
Statistical analysis

• Assessed sex/gender-specific prevalence of heavy drinking and volume of alcohol use by education

• Fine and Gray subdistribution hazard models to estimate the association between education and alcohol-attributable hospitalization or death
  • competing risk (all-cause mortality)

• Joint effect tested by an interaction between education and alcohol use
  • education was dichotomized (low/high) to improve precision

• Additive interaction assessed using the Synergy Index (S)

\[ S = \text{joint relative effect of the two exposures together} \]
\[ \text{sum of the relative effects of each exposure independently} \]
Heavy episodic drinking by education

Test for differential exposure:

- Highest prevalence of heavy drinking in individuals with:
  - a high school diploma
  - some post secondary

- Higher prevalence of heavy drinking in men compared to women
• Prevalence of medium and high-volume alcohol use increased with higher education, up to the excess volume category, where men with Bachelor’s degree or above group had the lowest prevalence.
## Educational inequities in alcohol-attributable harms

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Hospitalizations or deaths</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hazard Ratio (95%CI)</td>
<td>Hazard Ratio (95%CI)</td>
<td></td>
</tr>
<tr>
<td>less than high school</td>
<td>2.78 (2.17, 3.56)</td>
<td>2.98 (2.00, 4.44)</td>
<td></td>
</tr>
<tr>
<td>high school graduation</td>
<td>2.08 (1.63, 2.66)</td>
<td>1.21 (0.85, 1.71)</td>
<td></td>
</tr>
<tr>
<td>trades/certificate below Bachelor's degree</td>
<td>1.79 (1.42, 2.27)</td>
<td>1.17 (0.84, 1.64)</td>
<td></td>
</tr>
<tr>
<td>Bachelor's degree or above</td>
<td>Ref</td>
<td>Ref</td>
<td></td>
</tr>
</tbody>
</table>

Models adjusted for cycle, age (continuous), age², marital status, immigrant, province, and rurality
Joint effect of education and heavy drinking

- At each level of heavy drinking:
  - Individuals with low education experience greater alcohol-attributable harm
  - $S > 1$
  - Consistent in men and women

Models adjusted for cycle, age (continuous), age$^2$, marital status, immigrant, province, and rurality
Joint effect of education and heavy drinking

At each level of heavy drinking:
- individuals with low education experience greater alcohol-attributable harm
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Models adjusted for cycle, age (continuous), age\(^2\), marital status, immigrant, province, and rurality
Joint effect of education and heavy drinking

<table>
<thead>
<tr>
<th>Alcohol Use</th>
<th>Education</th>
<th>Hazard Ratio (95% CI)</th>
<th>Synergy Index (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Heavy Drinking</td>
<td>High Education</td>
<td>1.00 (Reference)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Education</td>
<td>1.65 (1.36, 2.00)</td>
<td></td>
</tr>
<tr>
<td>Heavy Drinking</td>
<td>High Education</td>
<td>3.67 (2.97, 4.54)</td>
<td>1.22 (1.14, 1.30)</td>
</tr>
<tr>
<td></td>
<td>Low Education</td>
<td>5.06 (4.22, 6.06)</td>
<td></td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Heavy Drinking</td>
<td>High Education</td>
<td>1.00 (Reference)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Education</td>
<td>1.39 (1.08, 1.80)</td>
<td></td>
</tr>
<tr>
<td>Heavy Drinking</td>
<td>High Education</td>
<td>4.10 (2.95, 5.70)</td>
<td>1.34 (0.88, 2.04)</td>
</tr>
<tr>
<td></td>
<td>Low Education</td>
<td>5.88 (4.31, 7.50)</td>
<td></td>
</tr>
</tbody>
</table>

Models adjusted for cycle, age (continuous), age², marital status, immigrant, province, and rurality

- At each level of heavy drinking:
  - individuals with low education experience greater alcohol-attributable harm
  - S > 1
  - Consistent in men and women
Joint effect of education and volume of alcohol use

Within risk groups:

- individuals with low compared to high education experience greater harm

\[ S > 1 \]

Models adjusted for cycle, age (continuous), age\(^2\), marital status, immigrant, province, and rurality
Within risk groups:

- individuals with low compared to high education experience greater harm
- $S > 1$

Models adjusted for cycle, age (continuous), age$^2$, marital status, immigrant, province, and rurality
Joint effect of education and volume of alcohol use

Within risk groups:

- individuals with low compared to high education experience greater harm

\( S > 1 \)

Models adjusted for cycle, age (continuous), age\(^2\), marital status, immigrant, province, and rurality
Conclusions

In a large population-representative sample:

- **Checkmark**: Individuals with low compared with high education experienced increased rates of alcohol-attributable hospitalization or death

- **Cross**: **Differential exposure to alcohol**: no evidence of increased heavy drinking or higher volume of alcohol use in individuals with lower education

- **Checkmark**: **Differential vulnerability to alcohol**: joint effect of low education and both heavy drinking and volume of alcohol use on alcohol-attributable hospitalization or death

- **Bullet point**: Population-level interventions are urgently needed that reduce both the high burden and socioeconomic inequities in alcohol-attributable harm
Limitations

• Nonresponse bias (may be larger among individuals with heavy drinking)

• Selection bias (exclusion of hard-to-reach populations from the CCHS sampling frame who may have higher alcohol use)

• Measurement error
  • self-reported measures that underestimate alcohol use – between 30-60%
    • no evidence this is different by sociodemographic factors
  • alcohol use only measured at one point in time

• True socioeconomic inequities in alcohol harm are likely underestimated
  • partially attributable health harm and non health harm due to alcohol not included
Alcohol policy options for reducing social inequities in alcohol harm

1. **Social determinants of alcohol use and harm**: directly target existing structural inequities whose effects accumulate over the lifecourse to influence risk of alcohol harm
Alcohol policy options for reducing social inequities in alcohol harm

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2. **Alcohol policies with differential impact**: disproportionately reduce alcohol use in populations experiencing inequities
   - minimum alcohol unit pricing introduced in Scotland in 2018 reduced alcohol sales overall, with greater reductions in lower-income households
Policy options for reducing social inequities in alcohol harm

1. **Social determinants of alcohol use and harm**: directly target existing structural inequities whose effects accumulate over the lifecourse to influence risk of alcohol harm

2. **Alcohol policies with differential impact**: disproportionately reduce alcohol use in populations experiencing inequities
   - minimum alcohol unit pricing introduced in Scotland in 2018 reduced alcohol sales overall, with greater reductions in lower-income households

3. **Population-level alcohol policies**: effective in reducing population per capita alcohol use
   - e.g., controlling alcohol availability, price, and advertising
Thank you!

The Joint Effect of Education and Alcohol Use on 100% Alcohol-attributable Hospitalization or Death in Canada

Smith, Brendan T.a,b; Warren, Christine M.a; Andreacchi, Alessandra T.a,b; Schwartz, Naomi; Hobin, Erin.a,b

*Epidemiology* 35(1):p 64-73, January 2024. | DOI: 10.1097/EDE.0000000000001674

Email: brendan.smith@oahpp.ca
References


Investigating income inequality and deaths of despair

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Postdoctoral Fellow, Public Health Ontario

February 7, 2024
CAPE CoP
Preface

• The papers described in this work have been published and are available online or via request from claire.benny@oahpp.ca
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  • DOI: 10.1136/jech-2023-220900

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- Paul J. Veugelers, University of Alberta
- Arjumand Siddiqi, University of Toronto
**Income inequality**

Gap between highest and lowest earners in an area

Typically measured as Gini coefficient on a scale from 0-1

The greater the difference between higher and lower earners, the greater the Gini coefficient

Available from: [https://censusmapper.ca/maps/](https://censusmapper.ca/maps/) (Accessed on January 19, 2024)
Would you rather live in a world where:
1) Your income is $50,000 and everyone else earns $25,000, or
2) Your income is $100,000 and everyone else earns $250,000

From Social Epidemiology (eds. Berkman, Kawachi & Glymour) p. 130
How does income inequality affect our health

3 main mechanisms:

• Social comparisons
• Erosion of social cohesion
• Disinvestment in social capital

Source PMCID: PMC1088996
Deaths of despair

Refers to deaths attributable to drug overdose, alcohol-related liver disease, suicide

Most research has been concentrated in the United States
  • None in Canadian context

Deaths of despair are large drivers of reductions in life expectancy with high economic costs
  • Even higher social costs for communities and individuals

Deaths due to substance use increasing by over 150% over the past two decades
  • Suicide deaths increased by 40% over the same period
Income inequality and deaths of despair

If we know that income inequality affects mental health, could the same be said for deaths of despair?

• Income inequality is risk factor of
  • Substance use
  • Adverse mental health
  • Other social factors

• Risk factors for deaths of despair:
  • Substance use
  • Adverse mental health
  • Other social factors
Income inequality and deaths of despair cont’d

Consider those three main mechanisms:

• Social comparisons
• Erosion of social cohesion
• Disinvestment in social capital
Main objective

- To investigate the association between income inequality among youth and time-to deaths of despair in Canada from 2006 to 2019.
Why in youth?

- Mental health conditions are typically onset in adolescence and young adulthood
- Initiation of drug use and drinking
- Suicide is a leading cause of death in youth
- Second most common group for experiencing drug overdose deaths
Methods

• Used Census data and death records from 2006 to 2019
  • Representative of the Canadian population under 20 years of age in 2006

• Income inequality measured using “Gini coefficient” (scores between 0 and 1)

• Outcomes included
  • Overall deaths of despair
  • Drug overdose
  • Suicide
  • *Alcohol-related liver disease
  • All-cause death
Methods cont’d

• Frequencies, proportions, and standard errors for sample characteristics
• Multi-level survival analysis for each outcome
  • Stratified analyses for gender
# Results

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Weighted n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual-level characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3759170*</td>
<td>48.67</td>
</tr>
<tr>
<td>Male</td>
<td>3964135</td>
<td>51.32</td>
</tr>
<tr>
<td>Immigrant status</td>
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<tr>
<td>Non-immigrant</td>
<td>7105150</td>
<td>92.00</td>
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<tr>
<td>Immigrant</td>
<td>618160</td>
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<tr>
<td>Income quintiles</td>
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<tr>
<td>Low</td>
<td>1383850</td>
<td>17.92</td>
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<tr>
<td>Low-moderate</td>
<td>1530355</td>
<td>19.82</td>
</tr>
<tr>
<td>Moderate</td>
<td>1581850</td>
<td>20.48</td>
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<td>Moderate-high</td>
<td>1606575</td>
<td>20.80</td>
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<tr>
<td>High</td>
<td>1620680</td>
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<tr>
<td>Visible minority status</td>
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<tr>
<td>Non-visible minority</td>
<td>5788625</td>
<td>74.95</td>
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<tr>
<td>Visible minority</td>
<td>1934685</td>
<td>25.05</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>10.05</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>CD-level characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After-tax Gini coefficient</td>
<td>0.38</td>
<td>0.01</td>
</tr>
<tr>
<td>% Lone-parent households</td>
<td>0.16</td>
<td>0.01</td>
</tr>
<tr>
<td>% Households with at least high school completed</td>
<td>0.4</td>
<td>0.01</td>
</tr>
<tr>
<td>Mean after-tax household income</td>
<td>58434.19</td>
<td>1575.78</td>
</tr>
</tbody>
</table>
Results

A SD-unit increase in Gini coefficient was associated with an increase in the hazard ratio for:

- deaths of despair (aHR*: 1.35; 95% CI: 1.04 1.75)
- drug overdose (aHR: 2.38; 95% CI: 1.63, 3.48)
- all-cause deaths (aHR: 1.10; 95% CI: 1.04, 1.18)

*Adjusting for age, sex, ethnicity, household income, immigrant status, and area-level factors
* For every one standard deviation unit increase in Gini coefficient there is an B% increase in x outcome.
• Income inequality and 'hospitalisations of despair' in Canada: a study on longitudinal, population-based data
  • If income inequality is associated with the “worst” possible outcome
    • What about more proximal outcomes?
Second objective

• To investigate the association between income inequality and ‘hospitalizations of despair’ in Canadians from 2006 to 2019
<table>
<thead>
<tr>
<th>Individual-level variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13 184 420</td>
<td>47.5</td>
</tr>
<tr>
<td>Female</td>
<td>14 568 800</td>
<td>52.5</td>
</tr>
<tr>
<td>Ethnic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>22 452 180</td>
<td>80.9</td>
</tr>
<tr>
<td>Non-white</td>
<td>5 301 040</td>
<td>19.1</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>6 624 440</td>
<td>23.9</td>
</tr>
<tr>
<td>Low moderate</td>
<td>7 280 620</td>
<td>26.2</td>
</tr>
<tr>
<td>Moderate high</td>
<td>6 880 690</td>
<td>24.8</td>
</tr>
<tr>
<td>High</td>
<td>6 967 470</td>
<td>25.1</td>
</tr>
<tr>
<td>Immigrant status</td>
<td></td>
<td></td>
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<tr>
<td>Immigrant</td>
<td>5 738 620</td>
<td>20.7</td>
</tr>
<tr>
<td>Not an immigrant</td>
<td>21 995 980</td>
<td>79.3</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school not completed</td>
<td>3 631 170</td>
<td>13.1</td>
</tr>
<tr>
<td>High school completed</td>
<td>4 584 840</td>
<td>16.6</td>
</tr>
<tr>
<td>Some postsecondary</td>
<td>2 500 000</td>
<td>9.0</td>
</tr>
<tr>
<td>Postsecondary completed</td>
<td>16 986 340</td>
<td>61.3</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In years</td>
<td>42.74</td>
<td>13.38</td>
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</table>

<table>
<thead>
<tr>
<th>Census division-level variables</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% educated</td>
<td>0.40</td>
<td>0.07</td>
</tr>
<tr>
<td>% visible minority households</td>
<td>0.16</td>
<td>0.17</td>
</tr>
<tr>
<td>% recent immigrant households</td>
<td>0.16</td>
<td>0.07</td>
</tr>
<tr>
<td>Median after-tax household income</td>
<td>$C47 998.74</td>
<td>$C8679.68</td>
</tr>
</tbody>
</table>

CD, census division.
Results cont’d

![Graph showing hazard ratios for different causes of hospitalization and suicide attempt/self-harm.](image-url)
Discussion

Overall, what we’ve seen is that higher income inequality is associated with increased risk of:

- Deaths of despair overall
- Drug overdose deaths
- Hospitalizations of despair overall
- Hospitalizations owing to drug overdose
- All-cause mortality and hospitalizations
Discussion cont’d

• Term implies direct etiology between despair and death
  • Counter to more up-to-date evidence
    • drug overdoses more commonly caused by drug contamination with synthetic opioids, loss of tolerance, etc.

• Why just overdose?
Inform discussions regarding:

- Income inequality (policies re: minimum wage increase, cash transfers)
- Mental health in higher income inequality areas
- Drug prevention and harm reduction
Would you rather live in a world where:

1) Your income is $50,000 and everyone else earns $25,000, or
2) Your income is $100,000 and everyone else earns $250,000

From Social Epidemiology (eds. Berkman, Kawachi & Glymour) p. 130
Review the international evidence:
Does alcohol control policy reduce alcohol use equally across population subgroups?

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Reducing alcohol use through alcohol control policies in the general population and population subgroups: a systematic review and meta-analysis

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What are alcohol control policies?

WHO Best Buy's

- Pricing policies
  - Alcohol taxation
  - Minimum pricing
- Availability restrictions
  - Spatial restrictions
  - Temporal restrictions
- Marketing ban
  - Advertising
  - Sponsoring
1 Pricing policies
Pricing policies: mechanism

- Pricing policy (e.g., higher alcohol taxes)
- Higher prices for alcoholic beverages
- Reduced demand
Pricing policies: alcohol taxation

- $n = 10$ studies
- Direct effect of alcohol excise taxes on alcohol consumption
- Study design had to allow for causal interpretation

- $\sim 10\%$ reduction in alcohol consumption levels with 100% tax increase
Pricing policies: minimum (unit) pricing

= Introducing a floor price on alcohol (MP) or a unit of alcohol (MUP)

• $n = 4$ studies

• MUPs between Int$ 0.88$ (UK) – 0.91 (AUS) per 10g pure alcohol

~$12\%$ reduction in alcohol consumption levels with introduction of MUP
Pricing policies: role of income

- Pricing policy (e.g., higher alcohol taxes)
- Higher prices for alcoholic beverages
- Lower affordability
- Reduced demand

\[
\text{disposable income} = \frac{\text{price of alcoholic beverage}}{}
\]
Pricing policies: MUP in Scotland

- MUP introduced on 1 May 2018 (£ 0.50 per 8g pure alcohol)

Alcohol purchases decreased among those purchasing the most alcohol

Alcohol purchases decreased in households with lower incomes

Fig 4 | Coefficients for changes in grams of alcohol purchased per adult per household, aggregated by week (main analysis, Scotland minus England), by purchasing fifths (lowest to highest from left to right) and income fifths (lowest to highest from left to right). Whiskers=95% confidence intervals

Source: O'Donnell et al. 2019: 10.1136/bmj.l5274
Pricing policies: MUP in Scotland

- Deaths and hospitalisations specific to alcohol (e.g., alcohol use disorders, liver cirrhosis) fell in neighbourhoods with highest level of deprivation.

<table>
<thead>
<tr>
<th>Deprivation decile</th>
<th>Deaths wholly attributable to alcohol consumption</th>
<th>Hospitalisations wholly attributable to alcohol consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Most deprived)</td>
<td>-21.6% (-31.8 to -10.0)</td>
<td>-6.8% (-11.9 to -3.3)</td>
</tr>
<tr>
<td>2</td>
<td>-17.5% (-27.5 to -5.9)</td>
<td>-4.5% (-10.8 to 2.3)</td>
</tr>
<tr>
<td>3</td>
<td>-33.6% (-43.4 to -22.1)</td>
<td>-6.3% (-11.3 to -1.0)</td>
</tr>
<tr>
<td>4</td>
<td>-19.3% (-29.4 to -7.7)</td>
<td>-6.9% (-11.4 to -2.3)</td>
</tr>
<tr>
<td>5</td>
<td>-9.7% (-27.2 to 12.2)</td>
<td>11.9% (-0.5 to 25.7)</td>
</tr>
<tr>
<td>6</td>
<td>-6.3% (-28.7 to 23.1)</td>
<td>-0.7% (-9.8 to 9.2)</td>
</tr>
<tr>
<td>7</td>
<td>-2.8% (-23.2 to 23.2)</td>
<td>0.7% (-7.6 to 9.7)</td>
</tr>
<tr>
<td>8</td>
<td>-9.2% (-28.3 to 14.8)</td>
<td>-1.2% (-8.1 to 6.4)</td>
</tr>
<tr>
<td>9</td>
<td>-2.9% (-23.5 to 23.2)</td>
<td>0.3% (-8.3 to 9.7)</td>
</tr>
<tr>
<td>10 (Least deprived)</td>
<td>-8.2% (-22.1 to 8.1)</td>
<td>-2.0% (-16.8 to 15.5)</td>
</tr>
</tbody>
</table>

Table 2: Change in outcomes from controlled models associated with the implementation of alcohol minimum unit pricing legislation, by subgroup.

Pricing policies: tax increase in Lithuania

- Alcohol excise taxes were increased in 2017: 110% for beer and wine and 23% for spirits

- Outcome: absolute difference in all-cause mortality in lower versus higher education groups (i.e., measure of inequality)

- No effect on mortality inequality among women

Availability restrictions
Availability restrictions

- \( n = 5 \) studies
- Off-premises alcohol sales banned on either Saturday or Sunday
- Asterisk indicates reversed effects

\(~3.6\%\) reduction in alcohol consumption levels with sales ban on one additional day
Availability restrictions

• Sunday alcohol sales ban repealed in Minnesota (US) in 2017

• Level of education

• Mortality increases are most prominent for men and women in high education groups

• Less pronounced or insignificant change in low and medium education groups

Source: Kilian et al. (unpublished)
• Alcohol control policies can impact alcohol use differently across socioeconomic groups

• This differential effectiveness can contribute to lowering health inequalities associated with alcohol use (or to widening it)

But let’s keep in mind

• Alcohol control policies cannot contribute to lower inequalities that arise from poor healthcare access, exposure to other risk factors etc.
The SIMulation of Alcohol Control Policies for Health Equity

- 5 years (August 2020 to July 2025)
- Funded by the National Institute on Alcohol Abuse and Alcoholism

NIH
National Institutes of Health

CAMH
Centre for Addiction and Mental Health

The University of Sheffield

Public Health Institute

Questions?
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