Decreasing life expectancy despite gains in cancer and cardio-vascular disease mortality? The role of addictions in public health in high-income countries

J. Rehm1-6

1 Institute for Mental Health Policy Research, Centre for Addiction and Mental Health (CAMH), Canada
2 WHO Collaborating Centre, CAMH, Canada
3 Institute of Medical Science, University of Toronto (UoT), Canada
4 Institute for Clinical Psychology and Psychotherapy, Technische Universität Dresden, Germany
5 Department of Psychiatry, UoT, Canada
6 Dalla Lana School of Public Health, UoT, Canada
Do alcohol and drug use really matter for public health?

The example of the US
Trends in life expectancy in the US – going up forever!?

Above since 1900; left from 1970 to 1990
But trends changed!  
Starting in middle aged non-Hispanic Whites, and now for the US as a whole

- Shock for the US: in the first decade of the 21st century, the life expectancy of middle-age white Non-Hispanic adults decreased, mainly in people with lower socioeconomic status (SES)!

- More recently, the overall life expectancy decreases in the US and other countries.

- Why? Since 1900 major decrease in life expectancy in the US happened in World Wars (WW) I and II and the 1918-19 Influenza Pandemic (which killed more people than WW I).

- But CVD and cancer mortality continue to decline!!

Case & Deaton, 2015 (including Figure 1); Rehm et al., 2016
Causes of death responsible for middle-aged non-Hispanic whites

- Poisoning/overdose
  - Opioids (prescription opioids, heroin)
  - Alcohol
  - Other pharmaceutical

- Suicide
  - Alcohol
  - Illegal drugs

- Liver cirrhosis
  - In Europe 75-80% alcohol-attributable
  - Illegal drugs → HCV

For the overall losses in life expectancy in the last year, mainly the same reasons!
<table>
<thead>
<tr>
<th>Category</th>
<th>Rate 2010</th>
<th>2014</th>
<th>% change</th>
<th>Rank in 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes</td>
<td>799.5</td>
<td>823.7</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Diseases of heart</td>
<td>193.6</td>
<td>192.7</td>
<td>-0.5</td>
<td>1</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>186.2</td>
<td>185.6</td>
<td>-0.3</td>
<td>2</td>
</tr>
<tr>
<td>Chronic lower respiratory diseases</td>
<td>44.7</td>
<td>46.1</td>
<td>3.1</td>
<td>3</td>
</tr>
<tr>
<td>Unintentional injury</td>
<td>39.1</td>
<td>42.6</td>
<td>9.0</td>
<td>4</td>
</tr>
<tr>
<td>Cerebrovascular diseases</td>
<td>41.9</td>
<td>41.7</td>
<td>-0.5</td>
<td>5</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>27.0</td>
<td>29.3</td>
<td>8.5</td>
<td>6</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>22.4</td>
<td>24</td>
<td>7.1</td>
<td>7</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>16.2</td>
<td>17.3</td>
<td>6.8</td>
<td>8</td>
</tr>
<tr>
<td>Nephritis, nephrosis</td>
<td>16.3</td>
<td>15.1</td>
<td>-7.4</td>
<td>9</td>
</tr>
<tr>
<td>Intentional self-harm (suicide)</td>
<td>12.4</td>
<td>13.4</td>
<td>8.1</td>
<td>10</td>
</tr>
<tr>
<td>Septicemia</td>
<td>11.3</td>
<td>12.2</td>
<td>8.0</td>
<td>11</td>
</tr>
<tr>
<td>Chronic liver disease and cirrhosis</td>
<td>10.3</td>
<td>12.0</td>
<td>16.5</td>
<td>12</td>
</tr>
<tr>
<td>Essential hypertension</td>
<td>8.6</td>
<td>9.5</td>
<td>10.5</td>
<td>13</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>7.1</td>
<td>8.2</td>
<td>15.5</td>
<td>14</td>
</tr>
<tr>
<td>Pneumonitis due to solids and liquids</td>
<td>5.5</td>
<td>5.9</td>
<td>7.3</td>
<td>15</td>
</tr>
<tr>
<td>100% drug-induced causes</td>
<td>13.1</td>
<td>15.6</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>100% alcohol-induced causes</td>
<td>8.3</td>
<td>9.6</td>
<td>15.7</td>
<td></td>
</tr>
</tbody>
</table>
How alcohol use impacts on all kinds of dementia -> consequences for life expectancy

57% of all early onset dementia either had an alcohol-related brain damage or were diagnosed with alcohol use disorders (Schwarzinger et al., in preparation; based on French data.)
Conclusion: alcohol and drugs are important for public health!

Different developments came together:

- Continued increase of prescription opioids and other prescription drugs -> with continued increase of prescription drug overdoses

- Shift to heroin of people who can no longer organize and/or pay for prescription opioids

- Continued increase in affordability of alcohol -> causing attributable deaths mainly in lower SES

- Continued increase of the income and health cleavage between rich and poor, and increase in size of the poor population
Global trends in substance use 1990-2015

Overall substance use and substance use disorders have been trending upwards globally over the past 25 years with the exception of tobacco!
Global and regional trends in adult alcohol *per capita* consumption 1990-2015 in litres pure alcohol
Global trends in age-standardized prevalence of substance dependence per 100,000 by sex and illegal drug category

Source: GBD 2015
Mega-trends for substance use and attributable harm

Unfortunately, substance use and attributable harm are especially increasing in people with low SES within a country. Some examples for alcohol!
Milanovic’s elephant of global income growth

- **Global income growth from 1988 to 2008**

  - **Booming global elite**
  - **Rising incomes in emerging economies, mainly China**
  - **Decline of developed world middle-class**
  - **Very poorest locked out of growth**

Source: Milanovic, B., Lead Economist, World Bank Research Department, *Global income inequality by the numbers*
Effects:

• Binge drinking

• Association with other risk factors → interaction

• Association with other determinants (e.g. health utilization) -> interaction
“... Over time, the relative inequality in alcohol-related mortality has increased in many countries, but the main change is a strong rise of absolute inequality in several countries in Eastern Europe (Hungary, Lithuania, Estonia) and Northern Europe (Finland, Denmark) because of a rapid rise in alcohol-related mortality in lower socioeconomic groups. In some of these countries, alcohol-related causes now account for 10% or more of the socioeconomic inequality in total mortality. Because our study relies on routinely collected underlying causes of death, it is likely that our results underestimate the true extent of the problem.

CONCLUSIONS:

Alcohol-related conditions play an important role in generating inequalities in total mortality in many European countries. Countering increases in alcohol-related mortality in lower socioeconomic groups is essential for reducing inequalities in mortality. Studies of why such increases have not occurred in countries like France, Switzerland, Spain, and Italy can help in developing evidence-based policies in other European countries.”

The more affordability increased, the higher the change in absolute inequality (Mackenbach et al., 2015) → consequence: reduce affordability!

Two ways to deal with inequalities

• Big ideas, such as eradication of poverty; seems to be unrealistic in the current world with inequality increasing (almost) every year
  • Current forces point to more inequality in immediate future (Milanović, 2016), even though some factors are known to counteract these forces (such as higher inheritance tax, opening of borders for workforce)
  • Inequality only improved with drastic changes like wars or epidemics in the last 100 years
  • Current systems seem to be at a loss in responding to both to global inequalities (e.g., refugee crisis) and to national inequalities and the rise of populist parties
• Nibble away at smaller factors such as alcohol, prescription opioids, tobacco, hypertension... (and access to and affordability of health care)
• Alcohol and illegal substance use has been increasing in recent decades, and so has the attributable harm.

• For some societies (US, Canada) prescription drug abuse is another major risk factor for burden of disease. Is Europe just some years lagging behind .... ?

• Alcohol and illegal drug use affects population health negatively, it increases inequalities, and is also linked negatively to reaching other sustainable development goals!

• The attributable harm from substance use could be reduced, if effective interventions (prevention and treatment) are initiated.

• However, we need to rethink some approaches and stop repeating dogmas which have proven to be not effective or not enforceable in current political environments.