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Substance misuse and violent crime: Swedish population study

Martin Grann, Seena Fazel

Many studies have reported strong associations between substance misuse and violent crime. But the population impact of people diagnosed with substance use disorders on such crime is not known. Calculating the population impact and the relative importance of different classes of drugs is necessary to estimate the likely public health effect of any developments in services and treatment interventions in preventing violent crime.

To investigate the overall impact of substance misuse on violent crime, we estimated the population attributable risk using data from high quality national psychiatric and crime registers in Sweden from 1988 to 2000.

Participants, methods, and results

Swedish citizens have a unique identification number that can be used to link data across health and crime registers. The hospital discharge register contains diagnoses of all individuals who are admitted to any general, psychiatric, or secure hospital for assessment or treatment. All patients are given a clinical diagnosis on discharge according to ICD-9 (until 1996) and ICD-10 (from 1997) (international classification of diseases, 9th and 10th revisions). This register is valid and reliable for psychiatric diagnoses.

The national crime register includes conviction data for people aged 15 (the age of criminal responsibility) and older. We extracted information on these individuals’ population attributable risk fractions, for substance misuse was not calculated by adding individual population attributable risk fractions to the crime register. We calculated the population attributable risk (PAR; the absolute difference in the rate of violent crimes per 1000 inhabitants in the whole population and the rate in individuals that had not been patients with substance misuse), and the population attributable risk fraction (PAF; the proportion of violent crimes in the whole population that may be attributed to patients with substance misuse) with standard methods assuming Sweden’s average population over age 15 during 1988-2000 was 6 724 503.

During 1988-2000, 127 789 individuals (1.9% of the population) were discharged from hospital with diagnoses of substance misuse (mean age at first admission 49.1 (standard deviation 16.4) years; 28.4% female) and committed 80 215 violent crimes. The individual population attributable risk fractions for alcohol and substance misuse were 16.1% and 11.6% (table). The overall population attributable risk fraction for substance misuse was not calculated by adding these individuals’ population attributable risk fractions, as some were admitted on repeated occasions, and a particular individual may have been diagnosed with alcohol or drug misuse on separate hospitalisations. The overall population attributable risk fraction for patients discharged with a principal diagnosis of conviction data included those whose court ruling involved a mental health disposal; a non-custodial sentence, caution, or fine; or a finding of legal insanity.

We identified individuals from the hospital discharge register with any principal or secondary diagnosis of alcohol misuse and alcohol induced psychoses (codes 291, 303, and F10), drug misuse and drug induced psychoses (292, 304, and F11-19) from 1 January 1988 to 31 December 2000 and linked them to the crime register. We calculated the population attributable risk (PAR; the absolute difference in the rate of violent crimes per 1000 inhabitants in the whole population and the rate in individuals that had not been patients with substance misuse), and the population attributable risk fraction (PAF; the proportion of violent crimes in the whole population that may be attributed to patients with substance misuse) with standard methods assuming Sweden’s average population over age 15 during 1988-2000 was 6 724 503.

Population attributable risk (PAR) and population attributable risk fraction (PAF) of patients with substance misuse to violent crime in Sweden 1988-2000

<table>
<thead>
<tr>
<th>Principal diagnosis</th>
<th>No people admitted to hospital</th>
<th>No crimes committed by non-patients</th>
<th>No crimes committed by patients</th>
<th>PAR (%)</th>
<th>PAF (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misuse of any substance</td>
<td>127 789</td>
<td>244 168</td>
<td>80 215</td>
<td>48.2</td>
<td>37.0</td>
</tr>
<tr>
<td>Alcohol misuse</td>
<td>105 918</td>
<td>267 558</td>
<td>56 825</td>
<td>48.2</td>
<td>40.4</td>
</tr>
<tr>
<td>Drug misuse</td>
<td>38 228</td>
<td>265 565</td>
<td>58 818</td>
<td>48.2</td>
<td>42.6</td>
</tr>
<tr>
<td>Drug misuse:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opiates</td>
<td>6 167</td>
<td>318 091</td>
<td>8 292</td>
<td>48.2</td>
<td>47.0</td>
</tr>
<tr>
<td>Cannabis</td>
<td>3 118</td>
<td>318 679</td>
<td>5 704</td>
<td>48.2</td>
<td>47.4</td>
</tr>
<tr>
<td>Sedatives</td>
<td>5 004</td>
<td>321 676</td>
<td>2 707</td>
<td>48.2</td>
<td>47.9</td>
</tr>
<tr>
<td>Cocaine</td>
<td>196</td>
<td>323 992</td>
<td>391</td>
<td>48.2</td>
<td>48.2</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>5 023</td>
<td>313 049</td>
<td>11 334</td>
<td>48.2</td>
<td>46.6</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>293</td>
<td>323 921</td>
<td>462</td>
<td>48.2</td>
<td>48.2</td>
</tr>
<tr>
<td>Solvents</td>
<td>368</td>
<td>323 791</td>
<td>592</td>
<td>48.2</td>
<td>48.2</td>
</tr>
<tr>
<td>Poly-drug misuse</td>
<td>13 413</td>
<td>303 446</td>
<td>20 831</td>
<td>48.2</td>
<td>45.3</td>
</tr>
</tbody>
</table>

*PAR and PAF were calculated separately for men and women. The overall population attributable risk fraction for substance misuse was not calculated by adding these individuals’ population attributable risk fractions, as some were admitted on repeated occasions, and a particular individual may have been diagnosed with alcohol or drug misuse on separate hospitalisations. The overall population attributable risk fraction for patients discharged with a principal diagnosis of substance misuse was not calculated by adding individual population attributable risk fractions to the crime register. We calculated the population attributable risk (PAR; the absolute difference in the rate of violent crimes per 1000 inhabitants in the whole population and the rate in individuals that had not been patients with substance misuse), and the population attributable risk fraction (PAF; the proportion of violent crimes in the whole population that may be attributed to patients with substance misuse) with standard methods assuming Sweden’s average population over age 15 during 1988-2000 was 6 724 503.
substance misuse was 23.3%. We redid the analyses including secondary diagnoses of alcohol and drug misuse, which increased the population attributable risk fraction slightly to 24.7% (data not shown).

Comment

We found that 16% of all violent crimes in Sweden during 1988-2000 were committed by people who had hospital discharge diagnoses of alcohol misuse, and more than a tenth of all violent crimes were committed by patients diagnosed as having misused drugs. Treatment services aimed at alcohol and drug misusers can potentially reduce violent offending.

The approach of population attributable risk is one way of exploring the relationship between substance misuse and violent crime. It assumes a causal relationship between the two and so estimates the maximum possible impact that any intervention might have. However, the co-occurrence of substance misuse and violent crime does not necessarily imply a simple causal relationship.

Integrating mental health and substance misuse services leads to improved outcomes. This integration should be extended to the criminal justice system. The costs to the criminal justice system of drug related crime are enormous—for example, in the United Kingdom, a conservative estimate is £1bn ($1.8bn; €1.5bn) annually. Interventions to reduce the risk of violence in patients who misuse alcohol and drugs could be highly cost effective.

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