The epidemiology of substance use – mapping the mapping

Louisa Degenhardt
The epidemiology of substance use – mapping the mapping

Louisa Degenhardt

Number of citations per annum
The epidemiology of substance use – mapping the mapping

Louisa Degenhardt
Very early years...describing people who use drugs

- No papers until 1990
- Emphasis upon clinical characteristics of samples – largely focused on people using or injecting opioids (heroin), then studies of people who were cannabis, amphetamine and cocaine dependent
- No examination of prevalence in the general population
- PhDs – Solowij, Ward, Rees, McKetin, Ross, Swift, Topp

RESEARCH REPORT

Drug use, injecting practices and sexual behaviour of opioid users in Sydney, Australia

SHANE DARKE, WAYNE HALL & JACQUELINE CARLESS
National Drug and Alcohol Research Centre, University of New South Wales, PO Box 1, Kensington, NSW 2033, Australia

Abstract
This paper examines drug use, injection practices, and sexual behaviour in a sample of 100 opioid users, both in and out of current opiate treatment. Approximately three-quarters of subjects reported that they had used more than one illicit substance in the month prior to being interviewed. Needle sharing was common, with 79% of sub, British Journal of Addiction (1991) 86, 1311–1316

Estimating drug consumption in opioid users: reliability and validity of a ‘recent use’ episodes method

SHANE DARKE, NICK HEATHER, WAYNE HALL, JEFF WARD & ALEX WODAK
National Drug and Alcohol Research Centre, University of New South Wales and ‘Alcohol and Drug Service, St Vincent’s Hospital, Sydney, Australia

Abstract
The efficient and accurate measurement of recent drug use is an essential component of treatment and research among opioid users. Urea analysis results alone will not give sufficient information to either the clinician or researcher, due to limitations in detection and an inability to distinguish extent of use. The present paper describes a ‘recent use episodes method’, adapted from the measurement of alcohol consumption, for obtaining self-reported drug use in eleven different drug categories. Reliability and validity data indicate that the method provides a quick means by which accurate information may be obtained on the overall recent drug use of opioid users.
1997-2001: Generating more robust estimates of prevalence of substance use disorders

- 1997 National Survey of Mental Health and Well-being
  - Substance use disorders
  - Comorbidity of SUDs
  - Treatment seeking
  - Disability
  - PhDs – Burns, Degenhardt, Proudfoot
- Indirect estimates of the prevalence of opioid dependence
  - Later expanded to amphetamine dependence (2004)
- Ongoing work
  - NSMHWB II
  - WHO's World Mental Health Surveys

Addiction (1999) 94(10), 1541–1550

RESEARCH REPORT

The 12-month prevalence of substance use and ICD-10 substance use disorders in Australian adults: findings from the National Survey of Mental Health and Well-Being

WAYNE HALL, MAREE TEesson, MICHAEL LYNsKEY & LOUIsA DEGENhardt

PUBLIC HEALTH

How many dependent heroin users are there in Australia?

Wayne D Hall, Joanne E Ross, Michael T Lynskey, Matthew G Law and Louisa J Degenhardt

In Australia, dependent heroin users are typically daily, or near-daily, injectors of heroin, and of other opioid and sedative drugs when heroin is not available. They continue to use heroin despite the risks of being arrested for drug or property crimes, imprisoned for heroin-related offences, contracting infectious diseases, and overdosing.

Credible estimates of the number of dependent heroin users are needed to plan appropriate public policy responses to the consequences of dependent heroin use. These consequences, which have negative effects on the community and public health, include bloodborne virus transmission, premature death from overdose, and crime. The need for credible estimates is especially pertinent now, because an increased use of

NDARC
National Drug & Alcohol Research Centre
1996-2003: Developing drug market surveillance

- Wardlaw report (1994)
- IDRS trial (1996)
- IDRS expansion
- Extension to party drugs (PDI – later EDRS)
- Beginning of annual reporting of selected statistics (e.g. opioid overdose deaths)
- Development of NIDIP

**AUSTRALIAN DRUG TRENDS 2001**

**THE ILLICIT DRUG REPORTING SYSTEM (IDRS) TRIAL: FINAL REPORT**

Julie Hando, Susannah O'Brien, Shane Darke, Lisa Maher & Wayne Hall
Reflections on a two-year national pilot of the Party Drugs Initiative (PDI)

Louisa Degenhardt, Jennifer Stafford, Stuart Kinner, Jennifer Johnston, Craig Fry, Raimondo Bruno & Maria Agalotis

Cohort trends in cumulative percentage of all deaths attributed to opioid overdose
Males 1964-1997
Using routine data to evaluate impact

- Evaluations of two controversial events that occurred in 2001:
  - Heroin shortage
  - Establishment of the Sydney Medically Supervised Injecting Centre
- Used in a range of studies e.g.
  - Alcohol Action in Rural Communities (AARC)
  - Post-market surveillance of new opioid medications
- PhDs: Day, Kimber, Larance, Breen, Havard

Effects of reduction in heroin supply on injecting drug use: analysis of data from needle and syringe programmes

Carolyn Day, Louisa Degenhardt, Stuart Gilmour, Wayne Hall

In early 2001 there was a dramatic decline in the availability of heroin in New South Wales (NSW), Australia, where previously heroin had been readily available at a low price and high purity. The decline was confirmed by Australia’s strategic early warning system, which revealed a reduction in heroin supply across Australia and a considerable increase in price, particularly from January to April 2001.

This “heroin shortage” provided a natural experiment in which to examine the effect of substantial changes in price and availability on injecting drug use and its associated harms in Australia’s largest heroin market, a setting in which harm reduction strategies were widely used. Publicly funded needle and syringe programmes were introduced to Australia in 1997, and methadone maintenance programmes, which were implemented, increased rapidly from 1999.

The effect of a reduction in heroin supply on fatal and non-fatal drug overdoses in New South Wales, Australia

Louisa J Degenhardt, Elizabeth Conroy, Stuart Gilmour and Wayne D Hall

3.3.2 Impact of MSIC on opioid poisoning hospital presentations

Figure 3.4 shows the monthly totals of opioid presentations at St. Vincent’s and Sydney Hospitals over the period July 1996 through October 2002.
Moving beyond cross-sectional: Cohort studies

- Move from cross-sectional descriptive studies to studies aimed at investigating specific questions around the course and potential consequences of substance use
- ATOS – heroin dependent people recruited in 2001 in and out of treatment
- Later cohorts;
  - Triple B
  - Parental alcohol supply
  - POINT
  - NOMAD
- PhDs: Williamson, Mills, Hetherington, Barrett, Silins, Campbell, Wadolowski, McCormack

**RESEARCH REPORT**

Health service utilization and benzodiazepine use among heroin users: findings from the Australian Treatment Outcome Study (ATOS)

Shane Darke¹, Joanne Ross¹, Maree Teessen¹ & Michael Lynskey²

¹National Drug and Alcohol Research Centre, University of New South Wales, Australia and ²Department of Psychiatry, Washington University School of Medicine, St Louis, USA

Young adult sequelae of adolescent cannabis use: an integrative analysis

Using data linkage to characterise burden

- CCRC – HERON – the first funded study involving linkage (Mattick, Burns)
  - Neonatal outcomes for women with a substance use disorder
- Initial studies focused on people who were opioid dependent
  - Mortality
  - Infectious disease and cancer
  - Incarceration and police arrest
  - Impacts of OST
- PhDs: Gibson, Larney, Nelson

Main reasons for hospital admissions by women with a history of methadone maintenance

LUCY BURNS, ELIZABETH CONROY & RICHARD P. MATTICK
National Drug and Alcohol Research Centre, University of New South Wales, New South Wales, Australia

Figure 3: Proportion of new entrant clients in treatment at 3, 6, 9 and 12 months by year of entry and first medication type. (a) methadone; (b) buprenorphine

Figure 2: Age-standardized mortality rate in a cohort of people treated for opioid dependence in New South Wales by 2-year groups, 1985–2005. Cause of death categories are mutually exclusive
Drugs on the global scene

- Global burden of disease studies:
- Secretariat for UN Reference Group on IDU and HIV
  - Estimates still guide UN agency policy
  - INCB – mapping opioid utilisation
  - Ongoing globally focused work

Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review

Bradley K. Mathers, Louise Degenhardt, Benjamin Phillips, Lucas Wiersinga, Matthew Hickman, Steffenie A. Streefland, Ais Wodak, Sumiao Panda, Mark Tyndall, Abdalla Toufigl, Richard P. Mattick for the 2007 Reference Group to the UN on HIV and Injecting Drug Use

Summary

Background: Injecting drug use is an increasingly important cause of HIV transmission in many countries worldwide. Our aim was to determine the prevalence of injecting drug use among individuals who inject drugs.

Methods: We did a systematic search of peer-reviewed (Medline, EMBASE, and PubMed) grey literature databases; and data requests were made to UN agencies and internal experts were reviewed, graded, and catalogued by the Reference Group to the UN on HIV.

Findings: Injecting drug use was identified in 148 countries; data for the event of many countries in Africa, the Middle East, and Latin America. The presence of HIV was reported in 120 of these countries. Prevalence estimates of injecting drug use were reviewed and catalogued by the Reference Group to the UN on HIV.

Interpretation: The number of countries in which the injection of drugs has been reported has increased in recent years. The high prevalence of HIV among many populations of injecting drug use is an important challenge. However, existing data are far from adequate, in both quality and extent of the data required to understand the global burden of disease attributable to illicit drug use and dependence.

Funding: UN Office on Drugs and Crime; Australian National Drug and Alcohol New South Wales.

Figure 2: Mean availability of opioids for pain management in 2011–13

Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010


Summary

Background: No systematic attempts have been made to estimate the global and regional prevalence of amphetamine, cannabis, cocaine, and opioid dependence and quantify their burden. We aimed to assess the prevalence and burden of drug dependence, as measured in years of life lived with disability (YLDs), years of life lost (YLLs), and disability-adjusted life-years (DALYs).

Methods: We conducted a systematic review of the epidemiology of drug dependence, and analysed results with Global Burden of Diseases, Injuries, and Risk (GlobEbur), 2010 (GlobEbur 2010) for the meta-regression technique (SimMed) to estimate population-level prevalence of dependence and use. GBD 2010 calculated disability weights for the use of representative community surveys and an Internet-based survey. We combined estimates of dependence with disability weights to calculate prevalence YLDs, YLLs, and DALYs. We estimated YLDs, YLLs, and DALYs attributable to drug use as a risk factor for other health outcomes.

Findings: Illicit drug use directly accounted for 10.9 million DALYs (95% UI 9.2–12.6 million), 10.4 million (95% UI 9.2–12.6 million), and 10.4 million (95% UI 9.2–12.6 million) in 2010. The proportion of all-causes DALYs attributable to drug dependence was 30% higher than in other drug users. Opioid dependence was the largest contribution to the direct burden of DALYS (9.2 million; 95% UI 7.1–11.4 million). The proportion of all-causes DALYs attributable to drug dependence was 30% higher in some regions than others, with an increased proportion of burden in countries with the highest income. Injecting drug use as a risk factor for HIV accounted for 2.1 million DALYS (95% UI 1.1–3.6 million) and as a risk factor for hepatitis C accounted for 2.2 million DALYS (95% UI 0.0–9.0 million) as a risk of opioid dependence for 6.7 million DALYS (95% UI 1.1–3.6 million) and as a risk of cocaine dependence for 3.7 million DALYS (95% UI 0.0–9.0 million). Opioid dependence for DALYS, and as a risk of cocaine dependence for 3.7 million DALYS.

Interpretation: Illicit drug use is an important contributor to the global burden of disease. Effective strategies to reduce the burden of opioid dependence and injecting drug use, such as delivery of opioid substitution treatment and needle and syringe programmes, are needed to reduce this burden at a population scale.

Funding: Australian National Health and Medical Research Council, Australian Government Departments of Health and Ageing, Bill & Melinda Gates Foundation.
Moving forward...

- Using data linkage to examine the impact of interventions
  - Using innovative statistical techniques e.g. machine learning
- Forming cohorts via data linkage to examine other substance use disorders (cf. opioids)
- Cross-national work: examining trajectories of substance use and system level differences in intervention impacts
- Global synthesis of existing evidence on epidemiology and harms
  - Towards a global consortium

**Crude mortality rates according to OST – first four weeks in prison**

<table>
<thead>
<tr>
<th></th>
<th>In OST</th>
<th>Out of OST</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-cause</td>
<td>13</td>
<td>0.8</td>
</tr>
<tr>
<td>Unnatural deaths</td>
<td>11</td>
<td>0.8</td>
</tr>
</tbody>
</table>

*NDARC*

*The Difference is Research*