

OPEN ACCESS

Full open access to this and thousands of other papers at <http://www.la-press.com>.

Drug, Sex and Age Differentials in the Use of Australian Publicly Funded Treatment Services

Jane Anne Fischer¹, Alexandra Marie Clavarino¹ and Jakob Moses Najman²

¹School of Pharmacy, Pharmacy Australia Centre for Excellence, The University of Queensland, Woolloongabba, Queensland, 4102, Australia. ²Schools of Population Health and Social Sciences, The University of Queensland, St Lucia, Queensland, 4072, Australia. Corresponding author email: jane_fischer@health.qld.gov.au

Abstract

Context: Little is known about the proportion of the Australian population using alcohol or other drugs who may seek treatment. There is a need to have some additional estimates of population morbidity which reflect harms associated with use.

Objective: To determine Australian population rates of publicly funded community based specialised alcohol and other drug treatment and in-patient hospital care by those ‘at risk’, by drug type, sex and age.

Design and setting: The design is secondary data analysis of publicly available datasets. We use the latest available complete data on Australian general population incidence of alcohol, cannabis amphetamines and ecstasy use (2007 National Drug Strategy Household Survey) and nationally collected administrative data on publicly funded specialised alcohol and other drug treatment services (2006–2007 Alcohol and Other Drug Treatment Services National Minimum Dataset) and public hospitals (2006–2007 National Hospital Morbidity Minimum Dataset) to calculate rates of drug treatment and in-patient hospital care per 1000 Australians. ‘At risk’ for alcohol is defined as being at risk of short term harm, as defined by the National Health and Medical Research Council (2001). ‘At risk’ for illicit drugs is defined as those exposed to potential harm through at least weekly use of cannabis, amphetamines and ecstasy use.

Results: Risky alcohol consumption followed by recent cannabis use appears to lead to most harm. Greater harm seems to be experienced by males rather than females. Younger adults (15–19 years) and older adults (40+ years) seem also to experience the highest rates of harm.

Conclusions: It is possible to derive population estimates of harms associated with licit and illicit drugs use. Treatment rates vary across drug type, gender and age. Alcohol and cannabis are the substances whose use leads to the greatest demand for services. Ecstasy appears to generate few presentations for treatment. Publicly available data can be used to estimate harms associated with the use of particular substances. Such estimates are best interpreted in the light of other ways of estimating harms.

Keywords: drug treatment, sex, age, population datasets

Substance Abuse: Research and Treatment 2012;6 13–21

doi: [10.4137/SART.S8561](https://doi.org/10.4137/SART.S8561)

This article is available from <http://www.la-press.com>.

© the author(s), publisher and licensee Libertas Academica Ltd.

This is an open access article. Unrestricted non-commercial use is permitted provided the original work is properly cited.



Introduction

The development of alcohol and other drug (AOD) treatment services should be guided by an understanding of the level and types of need which exists in the general population.^{1,2} Australia has well established drug information systems with a number of national data collections publicly available.^{3–7} However the Australian population who may be ‘at risk’ of requiring treatment and the extent that those with problems have sought treatment is uncertain; as is whether there may be drug specific, sex and age differences in treatment. These variables may provide important descriptive information for service planning and for monitoring policy outcomes.

AOD use by females was once considered to be relatively uncommon⁸ with research and treatment focusing on the experiences and needs of males.^{9,10} Yet about a third of illicit drug users are female^{8,10–12} and there seems to be increasing female AOD use in younger age cohorts.^{11–13} There is a suggestion that females are under-represented as drug treatment clients.^{8,14} A number of investigators have argued that females with AOD problems find treatment inaccessible because they may experience more stigma and marginalisation by the community generally and by treatment services specifically.^{15,16} For example females may experience judgemental attitudes from treatment staff^{10,17} particularly if they are the primary caregivers for children.⁹ Female treatment participation may be inhibited by concerns about losing custody of their children^{17–19} and the lack of child care options.^{20–22}

AOD use occurs across the life course, with age related declines in AOD prevalence and incidence the norm.^{23,24} However there is some concern that the prevalence and incidence of AOD use amongst older persons will increase in the near future. In the United States, researchers have become concerned about a combination of lifetime prevalence and recent increases in AOD use by ‘baby boomers’ (persons born 1946–1964). Given the ageing Australian population, an understanding of AOD use by older persons will also become increasingly important for policy makers.²³ Despite this our understanding of treatment engagement by older people, and its implications for health care delivery^{25–29} has been largely overlooked.^{21,23,25,28,30–32}

The need to enter treatment reflects problematic drug use, associated with adverse effects on the health of individuals.³³ This need is likely to involve a

subjective perception based upon actual and perceived problems associated with use. Generally treatment services are not focused on a particular substance but are provided for those who self-select because they use pattern is troubling to them. Arguably then the rates of service use provide an indication of sub self-perceived distress associated with the use of a particular substance. Further it can be argued that the use of hospital services represent a greater level of distress and a higher level of impairment and function.

The question of the number of people at risk in need of treatment however is often unknown as there are few available studies of sex and age differences in treatment engagement.^{34–36} Several researchers^{37–39} have explored methods to investigate the relative harms of different drugs. Whilst these approaches remain contentious, nationally collected data should be able to be used by policy makers and service providers as an indication of the availability of treatment and also as indicator of harms associated with use.^{38,40} Indeed to deliver appropriate services we need to know core information about the client group. Two potential indicators of the client group using publicly funded treatment use are rates of people choosing to seek help to reduce their alcohol/drug use and people forced to seek help because of direct/indirect harms from their alcohol/drug use. Using publicly available data it is possible to calculate rates of service use by these using at ‘at risk’ levels for particular substances.

Methods

Data sources

This is a comparative descriptive epidemiological study using the latest complete data from three national Australian data collections, the 2007 National Drug Strategy Household Survey 2007 (NDSHS),^{3,12,41} the 2006–2007 Alcohol and Other Drug Treatment Services National Minimum Dataset (NMDS)^{7,42} and the 2006–2007 National Hospital Morbidity dataset (NHMD).^{43–45} The NDSHS provides triennial data on the number of Australians aged 14 years and over³ at risk of short term harm from alcohol consumption and who have recently used cannabis, amphetamines and ecstasy. The NMDS consists of nationally collected data items on completed federally funded government and non-government community-based treatment episodes.^{46–48} In 2006–2007 this was 633 agencies.⁴⁸ For this study AIHW ‘data cubes’ (interactive



spreadsheets) from the 2006–2007 NMDS was used.⁴⁹ The NHMD consists of standard data items collected by publicly funded hospitals on all completed episodes of in-patient care.^{45,50} For this study, data from the 2006–2007 NHMD data cube were used.⁴³

‘At risk’ measure

‘At risk’ is defined as those who have been exposed to cannabis, amphetamines and ecstasy through at least weekly use. For alcohol, it is those at risk of short term harm, as defined by the National Health and Medical Research Council¹² and used by the NDSHS 2007. For males this is the consumption of seven or more standard drinks in any one day and for females it is the consumption of five or more standard drinks on any one day.^{41,51}

A consistent definition of ‘at risk’ across all drugs investigated is not possible. Although there are guidelines for alcohol, there is no consensus on ‘risky’ cannabis, ecstasy or amphetamine use. The criteria for risky use may vary by drug and frequency of use. Despite this there is a need to develop one consistent measure to estimate what constitutes problematic use. As there is consistent data on at least weekly use for all illicit drugs, we have used that measure here.

Statistical analysis

The numerators are completed treatment and hospital episodes by drug type, sex and age group. For completed treatment episodes these are the counts of each principal drug of concern (ie, alcohol, cannabis, amphetamines, ecstasy). The principal drug of concern is self-reported by the client and represents the drug which led them to seek treatment.^{12,46} For completed hospital episodes these are the counts of the designated ‘principal diagnosis’ codes from the International Statistical Classification of Disease and Related problems (ICD-10)⁵⁰ for which code F10,⁵² F12 (cannabinoids) and F15 (due to use of other stimulants) have been used.

Neither the NMDS nor NHMDS record the number of concurrent or consecutive treatment episodes for any one individual. This is a limitation of the data.⁴² Therefore there are likely to be multiple contacts in both data sources. Hence in the analyses allowances could not be made for repeaters (relapses) which may account higher usage rate of AOD treatment and hospital inpatient care.

The denominator is the number of persons exposed and therefore ‘at risk’. The denominators are the population point estimates for self-reported recent use (at least weekly) by cannabis, ecstasy and amphetamines^{12,41} by specific sex and age groups. As the level of risk associated with weekly use may vary by the substance used, interpretations of findings are subject to this caveat. Population point estimates were obtained by identifying the number of at last week users (recent users). Use in the last week was obtained from the NDSHS 2007 dataset. The proportion (in percentage) of those in the last 12 months who had recently used was then calculated. This percentage was multiplied by the population estimate of users in the last 12 months to obtain the population estimate for number of recent users. Hence the analysis presented consists of rates of treatment and hospital episodes per 1000 recent users, by drug type, sex and age group.

Results

Table 1 presents details of overall levels of those who use ‘at risk’ levels and the level of service use by substance and sex. The population ‘at risk’ was generally highest for those using alcohol or cannabis. By contrast only relatively modest numbers are using ecstasy and amphetamines. Both treatment and hospital use is dominated by those seeking help for alcohol problems and then cannabis. A moderate number of those

Table 1. Population estimates of those using at ‘at risk’ levels and service use, hospital (National Hospital Minimum Dataset (NHMD)) and community (National Minimum Dataset (NMDS)).

Drug	Males	Females
Population estimates of those at risk		
Alcohol	317,773	239,413
Cannabis	424,229	204,600
Ecstasy	110,993	76,748
Amphetamines	55,357	22,871
Service use – hospital (NHMD)		
Alcohol	23,741	19,262
Cannabis	2,157	938
Ecstasy	Data not available	Data not available
Amphetamines	2,356	1,098
Service use – community (NMDS)		
Alcohol	40,857	17,957
Cannabis	22,017	9,368
Ecstasy	768	231
Amphetamines	11,466	5,743



seeking services were using amphetamines and very few of those using ecstasy were seeking help. Hospital service use is dominated by those seeking help for an alcohol problem with very small numbers being admitted to hospital for problems associated with cannabis and amphetamines. The numbers admitted to hospital for a problem associated with their ecstasy use is so few that numbers have not been provided.

Table 2 presents details of male to female treatment and hospital episode rates by age group. There are consistently higher rates of treatment for males compared to females across all age categories. Indeed in some instances the treatment episode rate for males using at risky levels is two to three times that for females, particularly for alcohol and ecstasy use in the 20–29 years age group, and in hospital episode rates amphetamines in the 40 plus year age group.

Discussion

Following the work of Fischer et al (1997), Nutt et al (2007), and Caulkins et al (2011), we have provided broad population data of harm and treatment coverage associated with the most common drugs used by

Table 2. Relative rate (M:F) of use of treatment, National Hospital Minimum Dataset (NHMD) NHMD 2006–2007 and National Minimum Dataset (NMD) 2006–2007, for alcohol, cannabis, ecstasy and amphetamines, by age group.

Age group	NHMD			NMD		
	Males	Females	M:F	Males	Females	M:F
Alcohol						
15–19	1,267	1,031	1.23	3,111	1,238	2.51
20–29	2,680	1,834	1.46	10,194	3,296	3.09
30–39	4,512	3,263	1.38	11,778	5,354	2.20
40+	15,282	10,134	1.51	15,764	8,069	1.95
Cannabis						
15–19	334	138	2.42	4,986	2,147	2.32
20–29	902	404	2.23	9,264	3,671	2.52
30–39	662	290	2.28	5,216	2,393	2.18
40+	259	106	2.44	2,551	1,157	2.21
Ecstasy						
15–19	Data not available			204	83	2.51
20–29				459	104	4.41
30–39				89	34	2.62
40+				16	10	1.6
Amphetamines						
15–19	144	115	1.25	864	662	1.31
20–29	935	516	1.81	5,152	2,668	1.93
30–39	950	362	2.62	4,157	1,907	2.18
40+	327	103	3.17	1,293	506	2.56

Data Sources: NMD 2006–2007, NHMD 2006–2007.

Australians. Overall, we found evidence for population differentials (drug type, sex and age) in Australian publicly funded service utilisation with particularly high service use for alcohol, for males and for the 15–19 years and 40+ year age groups.

Alcohol and cannabis were the major drugs used at ‘at risk’ levels of harm in the community with comparatively fewer ‘at risk’ of harmful use evident for ecstasy and amphetamines. This partly reflects the prevalence of risky alcohol consumption in the Australian general population. It confirms the priority implicit in recent national campaigns to reduce the harm associated with alcohol consumption in the Australian general population the need to consider the comparative number of users³⁹ in primary prevention initiatives.

Treatment rates were higher for males than for females. This challenges the frequently reported finding that females are more likely to seek health care for a problem than are males^{53–55} but does confirm previous findings from studies with convenience samples.^{8,14} It may be that females present to generalist health services^{8,20} such as general practitioners but this unlikely.⁵⁶ We have also noted that only a small proportion of GP contacts are for alcohol or drug related health problems.⁵⁷ However it is possible that problematic use is not routinely detected in general practice. For instance few older adults with substance problems seek specialised treatment.^{21,23} Rather they may present to generalised health services^{58,59} with ‘atypical presentations’³¹ such as chronic non-malignant pain⁶⁰ or with other long term and chronic conditions.^{23,28,36,61} This may also be the case for females.

Limitations

There remains much contest over measuring ‘harms’ from drug use.^{37–39} We have used criteria for use that are generally associated with problematic patterns of use. However, frequency of illicit drug use is only one of the factors determining harmful use⁶² and cannot replace a comprehensive individual or sample assessment of drug use. A range of factors influence the number of treatment episodes, including comorbidity and age of treatment participants. Some of these details are not available. If other factors around drug use, such as quantity, risk behaviours and the co-occurrence of mental illness were also taken into account, it is likely that the assessment of ‘at risk’

illicit drug using populations would differ from those estimated here.

Aggregating data from a range of drug information systems has methodological problems.^{63,64} Consequently there are a number of technical limitations to the analysis. Our analysis is based upon the most recently used data taken from similar years. Whether these rates are stable across time is unknown. In this study we were also confronted by differences in drug use terminology and counting methods. For instance we were unable to obtain hospital separation data for ecstasy, as this may be accounted for in more than one ICD10 code. It also does not take into account situations in which AOD may be a secondary diagnosis which would increase separation rates.

There were a number of additional ICD codes that can be defined as drug-related hospital treatment such as drug-related injuries and poisoning, however these have not been included in this analysis. If included, these would increase the rate of treatment in specialised facilities. Similarly as the NMDS and the NHMD count treatment episodes and hospital admissions, there are likely to be multiple contacts for any one individual. Hence there is uncertainty over whether there is a small sub-section of drug users very heavily engaged in services.

We have used as our measure of harm completed treatment and hospital episodes and our exposed groups as the number of persons in the general population who have frequently used the specific substances. The harms associated with and treatment coverage is likely to vary drastically between countries. Therefore in broader application of the analysis we recommend clearly defining dataset nuances and applying locally relevant measures of harm and treatment.^{37,38}

Conclusion

Treatment rates vary across drug type, gender and age. It is salutary to note that alcohol and cannabis, in that order, remain the substances which lead to the greatest demand for treatment services. It is possible to calculate population estimates of 'at risk' for licit and illicit drugs use and AOD treatment utilisation within the Australian setting. The policy and political environment of AOD services is intensely political and contested. Although there is some disagreement around harm, there is consensus for developing an

evidence base inclusive of risk and benefits associated with AOD use. In constricted financial and political environments it is necessary to consider current treatment coverage and where policy should be focused to reduce the most harm from AOD use. Publicly available data can be used to estimate harms associated with the use of particular substances. Such estimates are best interpreted in the light of other ways of estimating harms.

Acknowledgements

This work was investigator driven. We acknowledge the contribution of the Australian Institute of Health and Welfare who provided the data.

Author Contributions

Conceived and designed the experiments: JAF, AMC, JMN. Analysed the data: JAF, JMN. Wrote the first draft of the manuscript: JAF. Contributed to the writing of the manuscript: JAF, AMC, JMN. Agree with manuscript results and conclusions: JAF, AMC, JMN. Jointly developed the structure and arguments for the paper: JAF, AMC, JMN. Made critical revisions and approved final version: JAF, AMC, JMN.

Disclosures and Ethics

As a requirement of publication author(s) have provided to the publisher signed confirmation of compliance with legal and ethical obligations including but not limited to the following: authorship and contributorship, conflicts of interest, privacy and confidentiality and (where applicable) protection of human and animal research subjects. The authors have read and confirmed their agreement with the ICMJE authorship and conflict of interest criteria. The authors have also confirmed that this article is unique and not under consideration or published in any other publication, and that they have permission from rights holders to reproduce any copyrighted material. Any disclosures are made in this section. The external blind peer reviewers report no conflicts of interest.

References

1. Babor T, Stenius K, Romelsjö A. Alcohol and drug treatment systems in public health perspective: mediators and moderators of population effects. *Int J Method Psych*. 2008;17(S1):S50–9.
2. Rush B, Sapag J, Chaim G, Quinteros C. Client characteristics within the Chilean National Youth Addiction Treatment Demonstration System. *J Sub Abuse Treatment*. 2011;40:175–82.



3. Shand F, Darke S, Makkai T, Griffiths P. The monitoring of drug trends in Australia. *Drug Alcohol Rev.* 2003;22:61–72.
4. Ministerial Council on Drug Strategy, *The National Drug Strategy: Australia's integrated framework 2004–9*. 2004, Canberra: Commonwealth of Australia.
5. Fitzgerald J, Seward T. *Drug Policy: The Australian Approach, in Australian National Council of Drugs Research Paper*. 2002, Australian National Council on Drugs: Canberra.
6. Hando J, Darke S, O'Brien S, et al. The development of an early warning system to detect trends in illicit drug use in Australia: The Illicit Drug Reporting System. *Addict Res.* 1998;6:97–113.
7. Australian Institute of Health and Welfare, *Enhancing the Alcohol and Other Drug Treatment National Minimum Data Set: counting clients and reporting co-morbidity*, in *Bulletin*. 2009, Australian Institute of Health and Welfare: Canberra.
8. Greenfield S, Brooks A, Gordon S, et al. Substance abuse treatment entry, retention and outcome in women: a review of the literature. *Drug Alcohol Depen.* 2007;86:1–21.
9. Wiechelt S. Introduction to the special issue: international perspectives on women's substance use. *Subst Use Misuse.* 2008;43:973–7.
10. Simpson M, McNulty J. Different needs: Women's drug use and treatment in the United Kingdom. *International Journal of Drug Policy.* 2008;19.
11. Van Haver T, Vanderplasschen W, Broekaert E, De Bourdeaudhui I. The influence of age and gender on party drug use among young adults attending dance events, clubs and rock festivals in Belgium. *Subst Use Misuse.* 2009;44:1899–915.
12. Australian Institute of Health and Welfare, *2007 National Drug Strategy Household Survey: Detailed Findings*. 2008, Australian Institute of Health and Welfare: Canberra.
13. Roche A, Deehan A. Women's alcohol consumption: emerging patterns, problems and public health implications. *Drug Alcohol Rev.* 2002;21:169–78.
14. Treloar C, Abelson J, Cao W, et al. *Barriers and Incentives to Treatment for Illicit Drug Users*. 2004, Commonwealth Department of Health and Ageing: Canberra.
15. Wright S, Klee H. Developing drug services for amphetamine users: taking account of gender-specific factors. *J Subst Use.* 2000;5:122–30.
16. Treloar C, Holt M. Deficit models and divergent philosophies: service providers perspectives on barriers and incentives to drug treatment. *Drug-Educ Prev Polic.* 2006;13:367–82.
17. Klee H. *Women, Family and Drugs*, in *Drug Misuse and Motherhood*, Klee H, Jackson M, Lewis S, editors. 2002, Routledge: London.
18. Charles S, Shivas T. Mothers in the media: blamed and celebrated—an examination of drug abuse and multiple births. *Pediatr Nurs.* 2002;28:142–7.
19. Suchman N, Mayes L, Conti J, et al. Rethinking parenting interventions for drug-dependent mothers: from behaviour management to fostering emotional bonds. *J Subs Abuse Treatment.* 2004;27:179–85.
20. DiGiusto E, Treloar C. Equity of Access to Treatment and barriers to Treatment for illicit Drug Use in Australia. *Addiction.* 2007;327–5.
21. Gossop M, Moos R. Substance misuse among older adults: a neglected but treatable problem. *Addiction.* 2008;103:347–8.
22. Sherman S, Kamarulzaman A, Spittal P. Women and drugs across the globe: a call to action. *Int J Drug Policy.* 2008;19:169–75.
23. Lynskey M, Day C, Hall W. Alcohol and other drug use disorders among older-aged people. *Drug Alcohol Rev.* 2003;22:125–33.
24. Shah A, Fountain J. Illicit drug use and problematic drug use in the elderly: is there a case for concern? *Int Psychogeriatrics.* 2008;20:1081–9.
25. Gfroerer J, Penne M, Pemberton M, Folsom R. Substance abuse treatment need among older adults in 2020: the impact of the ageing baby boomer cohort. *Drug Alcohol Depen.* 2003;69:127–35.
26. Simoni-Wastila L, Yang H. Psychoactive drug abuse in older adults. *Am J Ger Pharmacotherapy.* 2006;4:3802–294.
27. Boddiger D. Drug abuse in older US adults worries experts. *The Lancet.* 2008;372:1622.
28. Johnson P, Sung H. Substance abuse among Ageing baby boomers: health and treatment implications. *J Addict Nurs.* 2009;20:124–6.
29. Substance Abuse and Mental Health Services Administration, *The National Survey on Drug Use and Health Report: illicit drug use among older adults*. 2009, Office of Applied Studies: Rockville.
30. Patterson T, Jeste D. The potential impact of the baby boomer generation on substance abuse among elderly persons. *Psychiatr Serv.* 1999;50:1184–8.
31. McGrath A, Crome P, Crome I. Substance misuse in the older population. *Postgrad Med J.* 2005;81:228–31.
32. Colliver J, Compton W, Gfroerer J, Condon T. Projecting drug use among ageing baby boomers in 2020. *Annals of Epidemiology.* 2006;16:257–65.
33. United Nations Office on Drugs and Crime, *World Drug Report 2011*. 2011, United Nations Office on Drugs and Crime: Vienna.
34. Satri D, Mertens J, Arean P, Weisner C. Five year alcohol and drug treatment outcomes of older adults versus middle aged and younger adults in a managed care program. *Addiction.* 2004;99:1286–97.
35. Koenig T, Crisp C. Ethical issues in practice with older women who misuse substances. *Subst Use Misuse.* 2008;43:1045–61.
36. Hamilton A, Grella C. Gender differences among older heroin users. *J Women Aging.* 2009;21:111–24.
37. Fischer B, Kendall P, Rehm J, Room R. Charting WHO – goals for licit and illicit drugs for the year 2000: are we on the right track? *Public Health.* 1997;111:217–75.
38. Nutt D, King LA, Saulsbury W, Blakemore C. Development of a rational scale to assess the harm of drugs of potential misuse. *Lancet.* 2007;369:1047–53.
39. Caulkins JP, Reuter P, Coulson C. Basing drug scheduling decisions on scientific ranking of harmfulness: false promises from false premises. *Addiction.* 2011;106:1886–9.
40. Rossow I. Can harm ratings be useful? *Addiction.* 2011;106:1893–4.
41. Australian Institute of Health and Welfare, *2007 National Drug Strategy Household Survey: First results*. 2008, Australian Institute of Health and Welfare: Canberra.
42. Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia 2006–2007: Report on the National Minimum Data Set*, in *Drug Treatment Series*. 2008, Australian Institute of Health and Welfare: Canberra.
43. Australian Institute of Health and Welfare, Interactive Hospital Data, Australian Institute of Health and Welfare. www.aihw.gov.au/datacubes. Accessed July 10, 2009.
44. Australian Institute of Health and Welfare, *Australian Hospital Statistics 2005–2006*, in *Health Service Series*. 2007: Canberra.
45. Australian Institute of Health and Welfare, *Report on the Evaluation of the National Minimum Data Set for Public Hospital Establishments*, in *Health Services Series*. 2007, Australian Institute of Health and Welfare: Canberra.
46. Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services National Minimum Data Set Specifications 2006–2007: data dictionary, collection guidelines and validation processes*, in *Welfare Working Paper Series*. 2006, Australian Institute of Health and Welfare: Canberra.
47. Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services National Minimum Data Set Specifications 2003–2004: data dictionary, collection guidelines and validation processes*, in *Health Service Series*. 2003, Australian Institute of Health and Welfare: Canberra.
48. Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services In Australia: findings from the National Minimum Data Set 2006–2007*, in *Bulletin*. 2008, Australian Institute of Health and Welfare: Canberra.
49. Australian Institute of Health and Welfare, *Interactive Alcohol and Other Drug Treatment Serviced Data*, Australian Institute of Health and Welfare. www.aihw.gov.au/datacubes. Accessed July 10, 2009.
50. Australian Institute of Health and Welfare, *Australian Hospital Statistics 2005–2006*, in *Health Services 2007*, Australian Institute of Health and Welfare: Canberra.
51. National Health and Medical Research Council, *Australian alcohol guidelines: health risks and benefits*. 2001, Commonwealth of Australia: Canberra.
52. Wiesbeck G, Kuhl H, Yaldizli O, et al. Tobacco smoking and depression – results form the WHO/ISBRA study. *Neuropsychology.* 2008;57:26–31.
53. Koopmans GT, Lamers L. Gender and health care utilization: the role of mental distress and help-seeking propensity. *Social Science and Medicine.* 2007;64:1216–30.
54. Green R, Pope C. Gender, psychosocial factors and the use of medical services: a longitudinal analysis. *Social Science and Medicine.* 1999;48:1363–72.



55. Commonwealth of Australia, *Developing a Women's Health Policy for Australia—Setting the Scene*, Department of Health and Ageing, Editor. 2008, Commonwealth of Australia: Canberra.
56. Britt H, Miller G. *General Practice in Australia: health priorities and policy 1998–2008*, in *General Practice Series*. 2009, Australian Institute of Health and Welfare: Canberra.
57. Degenhardt L, Knox S, Barker B. The management of alcohol, tobacco and illicit drug use problems by General Practitioners in Australia. *Drug Alcohol Rev*. 2005;24:499–506.
58. Lay K, King L, Rangel J. Changing characteristics of drug use between two older adult cohorts: small sample speculations on baby boomer trends to come. *J Soc Work Prac Addict*. 2008;8:116–26.
59. Beynon C. Drug use and ageing: older people do take drugs! *Age Ageing*. 2009;38:8–10.
60. Brennan P, Schutte K, Moos R. Pain and use of alcohol to manage pain: prevalence and three year outcomes among older problem and non-problem drinkers. *Addiction*. 2005;100:777–86.
61. Levy J, Anderson T. The drug career of the older injector. *Addict Res Theory*. 2005;13:245–58.
62. Slade T, Johnston A, Teesson M, et al. *The Mental Health of Australians 2: Report on the 2007 National Survey of Mental Health and Wellbeing*. 2009 Department of Health and Ageing: Canberra.
63. Mounteney J, Fry C, McKeganey N, Haugland S. Challenges of reliability and validity in the identification and monitoring of emerging drug trends. *Subst Use Missue*. 2010;45:266–87.
64. Roxburgh A, Hall W, Degenhardt L, et al. The epidemiology of cannabis use and cannabis-related harm in Australia 1993–2007. *Addiction*. 2010;105: 1071–9.



Appendix

Appendix. Completed hospital (NHMD 2006–2007) and treatment episodes (NMDS 2006–2007) Per 1000 recent alcohol, cannabis, ecstasy and amphetamines users, by sex and age group.

Age group	Population estimate in the last week	NHMD		NMDS	
		Hospital episodes	Per 1000	Treatment episodes	Per 1000
Males					
Alcohol#					
15–19	26,282*	1,267	48.21	3,111	118.37
20–29	73,562	2,680	36.43	10,194	138.58
30–39	63,864	4,512	70.65	11,788	184.43
40+	154,065	15,282	99.19	15,764	102.32
Cannabis					
15–19	35,699	334	9.36	4,986	139.67
20–29	152,988	902	5.90	9,264	60.55
30–39	96,663	662	6.85	5,216	53.96
40+	138,879	259	1.86	2,551	18.37
Ecstasy					
15–19	7,157	Data not available		204	28.50
20–29	68,220			459	6.73
30–39	26,550			89	3.35
40+	9,066			16	1.77
Amphetamines					
15–19	1,063	144	135.47	864	812.79
20–29	31,746	935	29.45	5,152	162.29
30–39	19,602	950	48.46	4,157	212.07
40+	2,948	327	110.92	1,293	438.60
Females					
Alcohol#					
15–19	23,802	1,031	43.32	1,238	52.01
20–29	62,940	1,834	29.14	3,296	52.37
30–39	50,583	6,263	123.82	5,354	105.85
40+	102,088	10,134	99.27	8,069	79.04
Cannabis					
15–19	34,988	138	3.94	2,147	61.36
20–29	70,844	404	5.70	3,671	51.82
30–39	51,767	290	5.60	2,393	46.23
40+	47,001	106	2.26	1,157	24.62
Ecstasy					
15–19	11,438*	Data not available		83	7.26
20–29	31,520			104	3.30
30–39	30,030			34	1.13
40+	3,760			10	2.66
Amphetamines					
15–19	4,392	115	26.18	662	150.73
20–29	10,260	516	50.29	2,668	260.04
30–39	7,072	362	51.19	1,907	269.66
40+	1,147	105	91.54	506	441.15

Data Sources: 2007 NDSHS First Results and Detailed Findings, NMDS 2006–2007, NHMDS 2006–2007.

Notes: *NDSHS general population rate is 14–19 years, [#]risk of alcohol harm in the short term.



**Publish with Libertas Academica and
every scientist working in your field can
read your article**

*"I would like to say that this is the most author-friendly
editing process I have experienced in over 150
publications. Thank you most sincerely."*

*"The communication between your staff and me has
been terrific. Whenever progress is made with the
manuscript, I receive notice. Quite honestly, I've
never had such complete communication with a
journal."*

*"LA is different, and hopefully represents a kind of
scientific publication machinery that removes the
hurdles from free flow of scientific thought."*

Your paper will be:

- Available to your entire community
free of charge
- Fairly and quickly peer reviewed
- Yours! You retain copyright

<http://www.la-press.com>