

PSYC1022: The Psychology of Addiction

Topic 4: Harms of drug use (I)

Dr. Helena Pacitti

- Types of harm
- Burden of Disease
 - Metrics
 - Global & national estimates
 - Tobacco
 - Alcohol
 - Illicit drugs
- Harms to users



Types of harm

- Medical:
 - Organ damage, Neurotoxicity, Infections, Fetal exposure, Dependence, Injuries
- Social:
 - Relationships, Low education, Violence, Accidents, Criminality, Burden on health system/resources
- Economic:
 - Poor occupational attainment, Financial hardship, Poverty, Cost to employers, Homelessness, Cost of healthcare



Burden of disease

WHO estimate the burden of disease produced by addictive compounds. The estimation is based upon 3 main sources:

1. Prevalence & exposure to substances
2. Proportion of “problem users”
3. Disease categories are identified which have been demonstrated to be causally linked to use of the substance through epidemiological & experimental studies.
 - e.g. Alcohol: fetal alcohol syndrome, cancers, cirrhosis, Korsakoff's Syndrome, diabetes, stroke, heart disease, traffic accidents, violence (Rehm et al. 2009).



AIHW also provide information on the impact of substance use on the burden of disease.

3

Burden of Disease Metrics

WHO & AIHW use three metrics to report disease burden:

1. Years lived in ill health or with disability (YLD): Number of total years of *healthy life lost* from disease and injury that is attributable to the substance (non-fatal burden).
2. Years of life lost (YLL): Estimates of years of life lost by *premature death* as a result of a substance (fatal burden)
3. Disability-adjusted life years (DALY): a summary measure (in years) of *healthy life lost*, either through premature death (YLL) or, through living with ill health due to illness or injury (YLD).

Percentage of DALYs			
Alcohol use	4.4	4.2	6.7
Illicit drugs	0.9	0.8	2.1
Tobacco use	3.7	3.1	10.7
All three risks	9.0	8.1	19.2

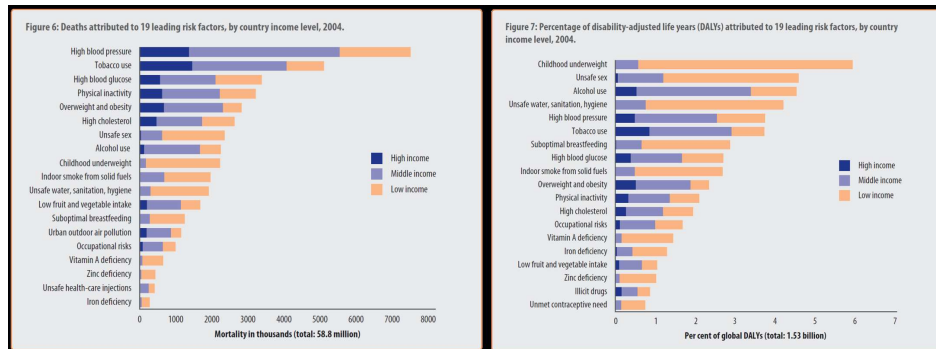
WHO (2009)

4

Global estimates of harm

WHO, 2009

- Deaths (left graph): tobacco is 2nd, alcohol is 8th & illicit drugs do not make this list.
- DALYs (right graph): alcohol is 3rd, tobacco is ranked 6th & illicit drugs are ranked 18th.
- Collectively, substance use (alcohol + tobacco + illicit drugs) is by far the leading cause of the global burden of disease compared to any other single category.



5

National Estimate of Burden: DALYs

- Proportion of DALY attributable to tobacco, alcohol and illicit drug use was 15.9%
- Burden greater in males (19%) compared to females (12.4%) AIHW, 2019

Table 5.1: Burden (DALY) attributable to the combined effect of tobacco, alcohol and illicit drug use, by sex, 2015

	Attributable DALY		
	Number	% of total DALY	ASR (per 1,000)
Males	478,007	19.0	38.8
Females	277,424	12.4	20.3
Persons	755,430	15.9	29.3

Note: Rates were age-standardised to the 2001 Australian Standard Population and are expressed per 1,000 population.

Source: AIHW analysis of the Australian Burden of Disease Database, 2015.

6

National: Types of Burden (Deaths, YLL & YLD)

Tobacco, alcohol & illicit drug use contributed to:

- 18% of deaths
 - higher in males (21%) than females (15%).
- 22% of YLL (fatal burden)
 - higher in males (24%) than females (19%).
- 10% of YLD (non-fatal burden)
 - higher in males (13%) than females (7.7%). AIHW, 2019

Table 5.2: Deaths, fatal (YLL) and non-fatal (YLD) burden attributable to the combined effect of tobacco, alcohol and illicit drug use, by sex, 2015

Sex	Attributable deaths and burden					
	Deaths	% of total deaths	YLL	% of total YLL	YLD	% of total YLD
Males	16,839	20.9	331,597	24.1	146,410	12.8
Females	11,713	15.3	181,974	18.5	95,450	7.7
Persons	28,552	18.2	513,570	21.8	241,860	10.1

Source: AIHW analysis of the Australian Burden of Disease Database, 2015.

7

National Estimates of Burden: Tobacco AIHW, 2019

Table 2.2: Burden (DALY) attributable to tobacco use, by sex, 2015

	Attributable DALY		
	Number	% of total DALY	ASR (per 1,000 population)
Males	257,522	10.2	20.1
Females	185,713	8.3	13.1
Persons	443,235	9.3	16.4

Note: The age-standardised rate (ASR) has been standardised to the 2001 Australian Standard Population.
Source: AIHW analysis of the Australian Burden of Disease Database, 2015.

Table 2.3: Deaths, fatal (YLL) and non-fatal (YLD) burden attributable to tobacco use, by sex, 2015

Sex	Attributable deaths and burden					
	Deaths	% of total deaths	YLL	% of total YLL	YLD	% of total YLD
Males	12,162	15.1	197,302	14.4	60,220	5.3
Females	8,771	11.4	126,175	12.8	59,538	4.8
Persons	20,933	13.3	323,477	13.7	119,758	5.0

Source: AIHW analysis of the Australian Burden of Disease Database, 2015.

8

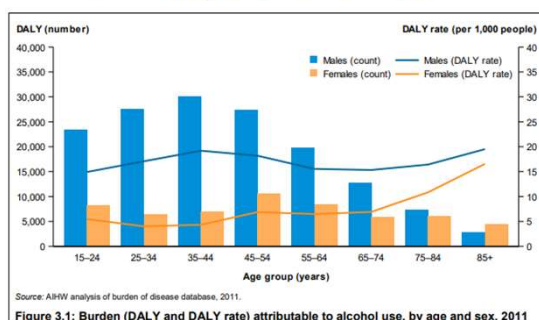
National estimates of burden: Alcohol

AIHW, 2018

Table 3.1: Burden (DALY) attributable to alcohol use by sex, 2011

	Attributable DALY		
	Number	% of total DALY	Age-standardised rate (per 1,000)
Males	151,149	6.3	13.5
Females	56,628	2.7	4.7
Persons	207,777	4.6	9.1

Note: The age standardised rate has been age-standardised to the 2001 Australian Standard Population.
Source: AIHW analysis of burden of disease database, 2011.



Source: AIHW analysis of burden of disease database, 2011.

Figure 3.1: Burden (DALY and DALY rate) attributable to alcohol use, by age and sex, 2011

9

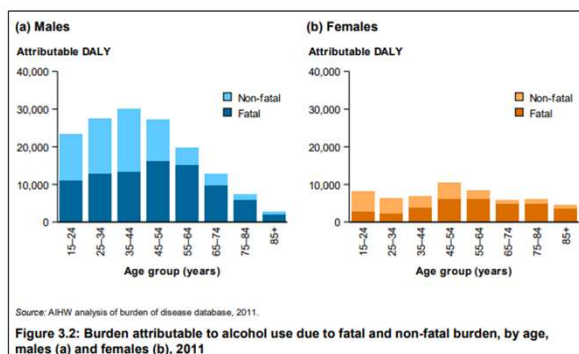
Table 3.2: Deaths, fatal (YLL) and non-fatal (YLD) burden attributable to alcohol use by sex, 2011

Sex	Attributable deaths and burden					
	Deaths	% of total deaths	YLL	% of total YLL	YLD	% of total YLD
Males	3,077	4.1	87,156	6.6	63,993	5.9
Females	1,962	2.7	34,979	3.7	21,650	1.9
Persons	5,039	3.4	122,135	5.4	85,642	3.9

Source: AIHW analysis of burden of disease database, 2011.

Types of burden: Alcohol

AIHW, 2018



Source: AIHW analysis of burden of disease database, 2011.

Figure 3.2: Burden attributable to alcohol use due to fatal and non-fatal burden, by age, males (a) and females (b), 2011

10

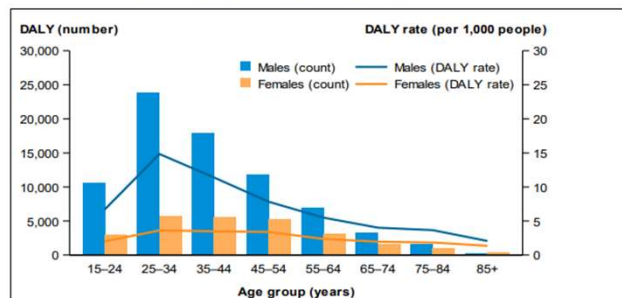
National estimates of burden: Illicit Drug Use

AIHW, 2018

Table 6.1: Burden (DALY) attributable to illicit drug use by sex, 2011

	Attributable DALY		
	Number	% of total DALY	Age standardised rate (per 1,000)
Males	76,298	3.2	6.9
Females	25,567	1.2	2.3
Persons	101,865	2.3	4.6

Note: The age standardised rate has been age-standardised to the 2001 Australian Standard Population.
Source: AIHW analysis of burden of disease database, 2011.



Source: AIHW analysis of burden of disease database, 2011.

Figure 6.1: Burden (DALY and DALY rate) attributable to illicit drug use by age and sex, 2011

11

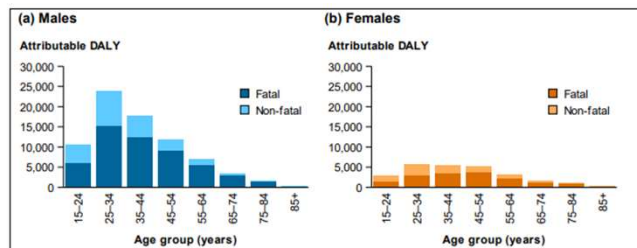
Table 6.2: Deaths, fatal (YLL) and non-fatal (YLD) burden attributable to illicit drug use, by sex, 2011

Sex	Attributable deaths and burden					
	Deaths	% of total Deaths	YLL	% of total YLL	YLD	% of total YLD
Males	1,392	1.8	53,469	4.0	22,829	2.1
Females	545	0.8	16,950	1.8	8,617	0.8
Persons	1,937	1.3	70,419	3.1	31,447	1.4

Source: AIHW analysis of burden of disease database, 2011.

Types of burden: Illicit Drug Use

AIHW, 2018



Source: AIHW analysis of burden of disease database, 2011.

Figure 6.2: Burden attributable to illicit drug use due to fatal and non-fatal burden, by age, males (a) and females (b), 2011

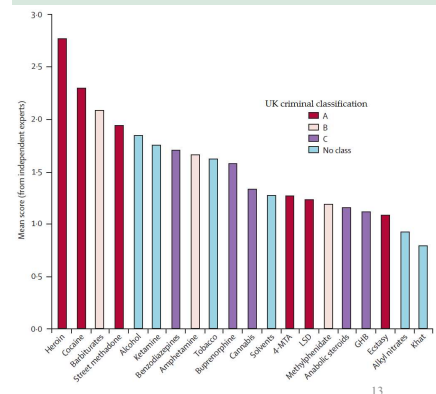
12

Harms to users

[Nutt et al. \(2007\)](#): rate harm potential of various substances

- 4 point scale: ranging from 0 (no risk) to 3 (extreme risk) for each of the 9 parameters
- Total harm score equals sum of scores for each parameter
 - emphasizes harm to users but includes social harms too
- Harm scores for drugs from two independent expert groups were strongly correlated indicating broad consensus amongst experts
- No significant correlation between these harm rankings & the UK criminal classification scheme

Parameter		
Physical harm	One	Acute
	Two	Chronic
	Three	Intravenous harm
Dependence	Four	Intensity of pleasure
	Five	Psychological dependence
	Six	Physical dependence
Social harms	Seven	Intoxication
	Eight	Other social harms
	Nine	Health-care costs



Harms to users & others in Aus.

Bonomo et al (2019): used Nutt's approach with 25 experts scoring 22 drugs.

- 16 parameters covering harm to others (7) & users (9)
- Most harmful to users
 - fentanyl, heroin & meth
- Most harmful to others
 - alcohol, meth & tobacco.
- Overall harm score (others + users)
 - alcohol, tobacco & meth

