

The burden of death, disease and disability due to alcohol in New Zealand

Research summary

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Reason for the research

The effects of alcohol consumption on the health of the population are important determinants of public policy on alcohol. A better understanding of the extent of the health impacts of alcohol, and of who is most affected and why, provides an improved basis for making policy decisions and for designing and targeting interventions to reduce harm.

Design of the study

This study aimed to assess the health impacts of alcohol consumption in New Zealand in terms of the types of health conditions most affected, the numbers of deaths caused and prevented in a year, and the years of life lost or gained by the population as a result. The amount of non-fatal disease and disability due to alcohol was also estimated and combined with the information on deaths to produce an overall assessment of the health burden in terms of disability-adjusted life years¹ (DALYs) lost.

We used and adapted methods that were developed by the World Health Organisation (WHO) for measuring the impact of important risk factors on health globally (Comparative Risk Assessment). For each health condition that has an established relationship with alcohol, the magnitude of the risk or benefit at different levels of alcohol consumption was clarified from the epidemiological literature. A list of the conditions that were included is given in Table 1.

The average level of alcohol consumption in Māori and non-Māori populations for each age and sex group, and average pattern of drinking², were identified from the best available survey data. These were combined with the estimates of alcohol-disease relationships, to calculate how much of each alcohol-related condition was attributable to alcohol. Information about how many people died from each alcohol-related condition in 2000, and the age, sex and ethnicity distribution of the deaths, was obtained from the New Zealand Health Information Service. Estimates of the disability-adjusted life years lost for each condition in NZ in 2002 were obtained from the Global Burden of Disease Study. Wherever possible we considered Māori and non-Māori populations separately.

Table 1. Alcohol-related conditions included in the study

Conditions

Cancers

Mouth and oropharyngeal cancers
Oesophagus cancer
Liver cancer
Laryngeal cancer
Breast cancer

Diabetes

Diabetes mellitus

Neuro-psychiatric disorders

Alcohol use disorders
Unipolar depressive disorders
Epilepsy

Cardiovascular disorders

Hypertensive heart disease
Ischaemic heart disease
Cardiac arrhythmias
Oesophageal varices
Stroke, ischaemic or haemorrhagic

Digestive disorders

Cholelithiasis
Pancreatitis
Alcoholic liver cirrhosis

Conditions arising during pregnancy

Spontaneous abortion
Low birth weight
Fetal alcohol syndrome

Injuries

Road traffic injuries
Alcohol poisoning
Other poisonings
Falls
Drownings
Other unintentional injuries

¹ One DALY can be thought of as one year of healthy life. DALYs are lost through premature death or living with less than perfect health.

² Pattern of drinking refers to the way in which most alcohol is consumed, such as in irregular heavy drinking sessions or binge drinking, compared with light daily drinking.

The nature of the study meant that health and social outcomes of alcohol use that are not recognized in the ICD-10 coding system³ could not be included.

Main Findings

We estimated that 3.9% of all deaths in New Zealand in 2000 were attributable to alcohol consumption (approximately 1040 deaths), and that approximately 980 deaths were prevented by alcohol, resulting in a net loss of about 60 lives. Since many of the alcohol-attributable deaths occurred before middle age and the deaths prevented by alcohol were almost entirely amongst older people, many more years of life were lost due to alcohol than gained. There were 17,200 years of life estimated to be lost, but only 5,300 years of life were estimated to have been gained; a net loss of almost 12,000 years of life due to alcohol in one year in New Zealand (see Table 2).

Loss of life resulting from alcohol use was not evenly spread in the population.

- Years of life lost due to alcohol were four to five times higher for men than women, largely due to high alcohol-related mortality in men in the 15-44 year age group. This difference between men and women was seen in both the Māori and non-Māori populations.
- Both Māori men and Māori women had higher death rates and YLL rates than non-Māori of the same age. Overall, Māori had 4 times the alcohol-related mortality of non-Māori, and more than double the rate of years of life lost due to alcohol, after adjustment for differences in age structure of the two populations. Fewer lives were lost due to alcohol as well as more deaths prevented by alcohol in non-Māori compared with Māori, relative to the size of their populations.

Table 2:
Mortality and years of life lost (YLL) attributable to alcohol, by ethnicity and sex, 2000

	Ethnicity	Deaths caused	% of all deaths	Deaths prevented	Net deaths (count)	Net deaths (rate)*	Net YLL (count)	Net YLL (rate) *
Males	Māori	161	11.3	47	114	37.8	3143	1100
	Non-Māori	557	4.5	476	81	9.7	6533	442
	Total	718	5.2	523	195	13.6	9676	548
Females	Māori	45	3.9	26	19	1.9	769	240
	Non-Māori	273	2.3	431	-158	-0.8	1468	112
	Total	319	2.5	457	-139	-0.1	2237	136
Total	Māori	206	8.0	73	133	19.0	3912	656
	Non-Māori	831	3.4	907	-77	4.5	8001	276
	Total	1037	3.9	981	56	6.7	11913	339

* rate per 100,000 age-standardised to WHO world population

³ ICD-10 is the International Classification of Diseases Version 10, a widely accepted coding system for health conditions

Major alcohol-related health conditions

Injury

- 51% of alcohol-related deaths (532 deaths) and 72% of years of life lost (12,434 YLLs) were due to injuries. Most alcohol-related deaths before middle age were due to injuries.

Cancers

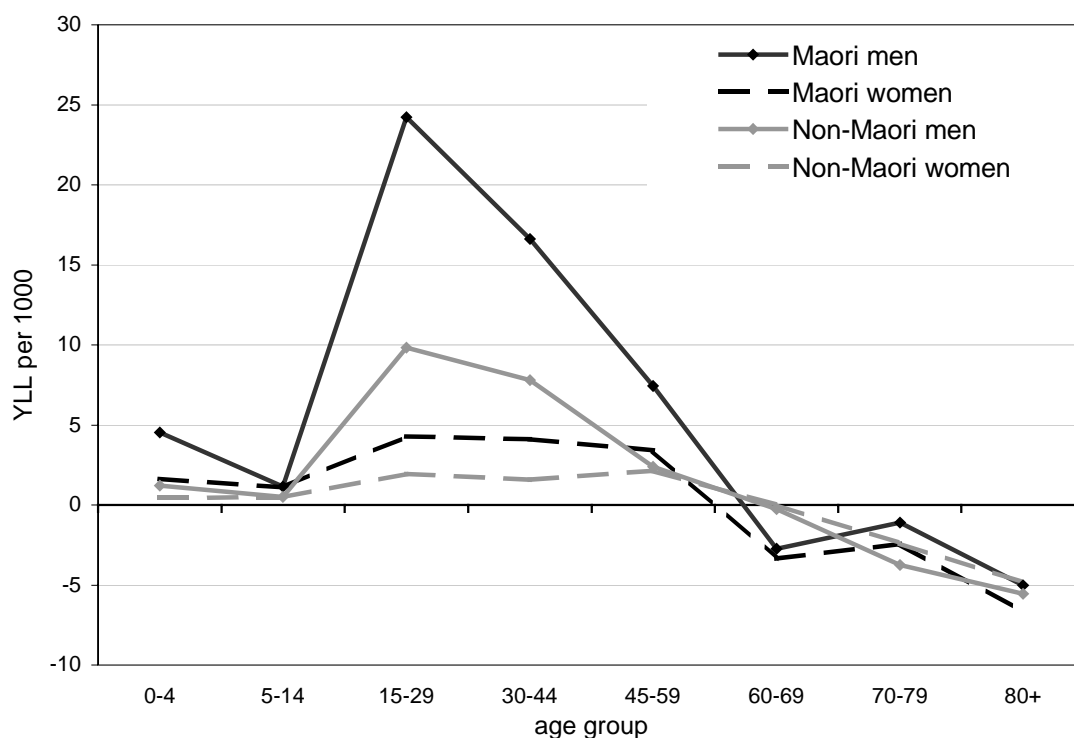
- 24% of alcohol-related deaths and 14% of YLLs resulted from cancers.

Coronary heart disease

- Most of the positive effects of alcohol consumption were seen in prevention of ischaemic heart disease deaths in older people who had a pattern of drinking characterised by frequent low volume intake (78% of all deaths prevented). Reduction in deaths due to stroke, diabetes and complications of cholelithiasis made up the remainder.

The predominance of injury as a cause of death in children and young adults, and of ischaemic heart disease and stroke in older adults, means that the balance of risks and benefits of alcohol consumption depended strongly on patterns of drinking, and varied with age. Figure 1 shows the net effect of detrimental and preventive impacts of alcohol for Māori and non-Māori, at different ages. Reflected in these figures are the effects of different average drinking patterns in Māori and non-Māori, and the small proportion of Māori in the oldest age groups.

Figure 1: Age-specific rates of net years of life lost due to alcohol, by ethnicity and gender



Disability-adjusted life years lost

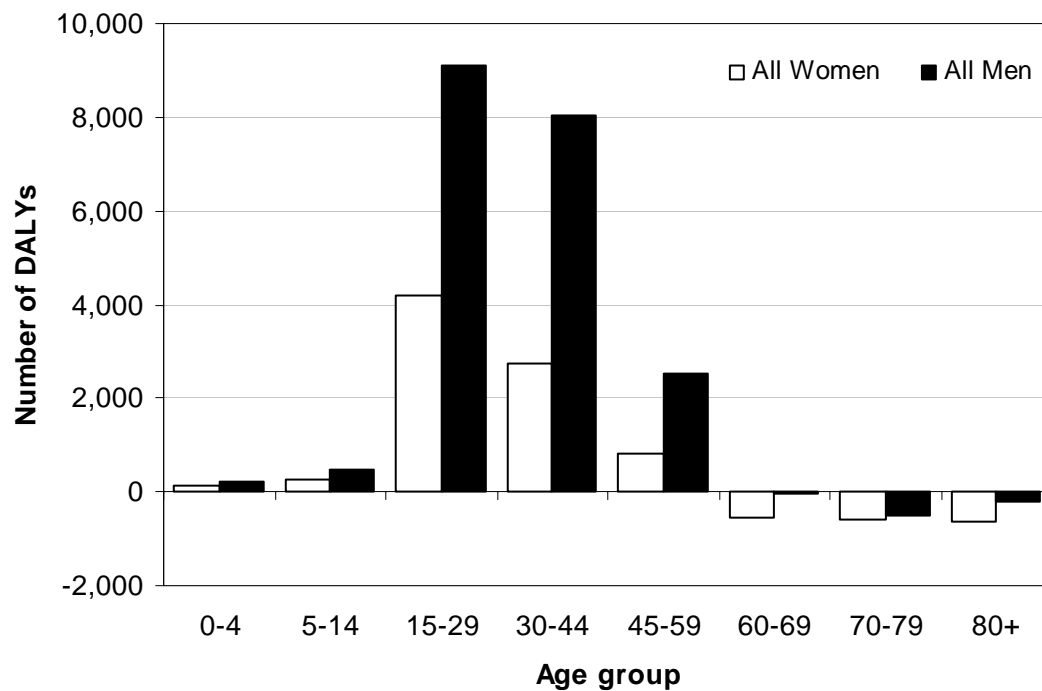
In a separate analysis incorporating morbidity as well as mortality, the loss of 33,500 disability-adjusted life years (DALYs) was attributed to alcohol for the New Zealand population in 2002. This comprised 7.4% of all DALYs lost in the population (10% of all DALYs in men and 4% in women).

The largest single cause of alcohol-related DALYs lost was alcohol use disorders, responsible for 49%.

The benefits of alcohol resulted in a gain of approximately 7,500 DALYs, and these were evenly split between men and women. Overall, there was a net loss of 26,000 DALYs attributable to alcohol, with 76% lost by men.

These figures underestimate the adverse impacts of alcohol consumption on health, as they exclude many mental health outcomes, and important social consequences.

Figure 2: Net number of DALYs caused or prevented by alcohol consumption, 2002



Conclusions

Alcohol is responsible for a considerable burden of ill health. While elimination of alcohol consumption is not realistic, and may not be desirable, an evidence-based approach to promoting safer drinking has the potential to reduce both acute and chronic consequences of alcohol. Most of the benefits of alcohol are based on specific patterns of drinking, which are associated with small risk for other disease endpoints, so the burden of alcohol use could be substantially reduced while retaining the benefits.

Five major messages have emerged from this analysis:

- **There are no health benefits of drinking alcohol before middle age**

Most of the benefits of alcohol consumption accrue in the elderly, and so benefits that appear large in terms of mortality are less impressive when expressed as years of life lost or DALYs. The benefits are associated with regular low-volume intake, and risks associated with heavy drinking persist into old age.

- **The pattern of drinking is very important in determining the health effects of alcohol consumption**

It is increasingly clear that for drinkers consuming the same average volume of alcohol, pattern of drinking has a major influence on both benefits and harms. Moving towards patterns of drinking that are safer in terms of physical health outcomes is also likely to reduce the unmeasured social consequences of alcohol consumption.

- **Injury is responsible for half of all alcohol-attributable deaths and almost three-quarters of the years of life lost due to alcohol**

Changes in the pattern as well as the context of much alcohol consumption will be needed to substantially reduce the burden of injury due to alcohol. Even amongst low volume regular drinkers, there are increased risks of injury associated with alcohol.

- **There is a huge burden of disability due to alcohol use disorders that is not reflected in mortality figures**

Our perception of the burden of alcohol is highly influenced by which measures are used to quantify it. The DALY analysis highlights the substantial morbidity from alcohol abuse and dependence in the community.

- **The health burden of alcohol falls inequitably on Māori.**

The combination of more harmful drinking patterns and a smaller proportion of the population in the older age groups where benefits accrue, means that the Māori population is more adversely affected by alcohol than non-Māori population. Almost all health benefits from alcohol consumption are in non-Māori, and when we measure the health effects of alcohol in the combined NZ population the disparities are obscured.

Further details:

A more detailed description of this study's findings and methods can be found in the full report to ALAC.

Connor J, Broad J, Rehm J, Vander Hoorn S, Jackson R. (2004) The burden of death, disease and disability due to alcohol: Report to ALAC. Auckland: University of Auckland and Alcohol Advisory Council of New Zealand.

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Disclaimer

Any findings, conclusions or opinions expressed in this report are those of the authors and are not to be attributed to ALAC.