

Western Australian Burden of Disease Study 2015

Contribution of risk factors to burden in health regions of WA

Western Australian Burden of Disease Study 2015 — contribution of risk factors to burden in health regions in WA

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Using the term 'Aboriginal people'

Within Western Australia, the term 'Aboriginal people' is used in preference to 'Aboriginal and Torres Strait Islander people', in recognition that Aboriginal people are the original inhabitants of Western Australia. 'Aboriginal and Torres Strait Islander people' may be used in the national context and 'Indigenous people' may be used in the international context. No disrespect is intended to our Torres Strait Islander colleagues and community.

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Introduction

Burden of disease studies provide an assessment of the impact of diseases, injuries and risk factors on a population. This impact is measured as 'disability-adjusted life years' (DALY); that is, the sum of 'years of life lost prematurely' (YLL) and 'years lived with disability' (YLD) (Prüss-Üstün et al. 2003). Throughout this report, DALY will be referred to as 'total burden'.

Risk factors are "attributes, characteristics or exposures that increase the likelihood of a person developing a disease or health disorder" (Australian Institute of Health and Welfare 2017). Risk factors can be categorised as either behavioural, metabolic, dietary or environmental. There are also risk factors that are social determinants (such as income, employment and education). Some risk factors are easier to modify than others. Understanding the impact of risk factors on the burden of disease is critical to inform design and planning of evidence-based disease prevention programs.

The Western Australian Burden of Disease Study (WABoDS) 2015 is a collaboration between the Australian Institute of Health and Welfare (AIHW) and the Epidemiology Branch of the Department of Health WA. Several reports have been published using the WABoDS 2015 data (Department of Health 2020a, Department of Health 2020b, Department of Health 2020c).

This report aims to examine the leading modifiable risk factors contributing to the total burden of disease in each health region of Western Australia. It is not intended to be a comprehensive analysis, but to provide a snapshot of each region. It complements the Western Australian Burden of Disease Study 2015 – Summary report for the health regions (Department of Health WA 2020d). This report also aims to assist in identifying priority areas and target populations for prevention activities, which will inform planning for future service delivery in each health region.

Methods

The attributable burden methodology is based on the Australian Burden of Disease Study (ABDS) 2011 and 2015, with minor updates.

Firstly, Population Attributable Fractions (PAF) were calculated. A PAF is the proportion of all cases of a disease that can be attributed to a specific risk factor (Mansournia 2018). Detailed calculation and disease selection methods were described in the Australian Burden of Disease Study: methods and supplementary material 2015 report (Australian Institute of Health and Welfare 2019). The two essential pieces of information in this calculation are the relative risk and the prevalence of exposure to risk factors.

Then, the PAF is multiplied by the total burden of a specific disease or population group. This provides the disease burden which is attributable to the risk factor. Attributable burden reflects the direct link between a risk factor (for example, tobacco use) and a disease or injury outcome (for example, lung cancer).

Finally, the attributable burden of each risk factor was divided by the total burden (i.e. DALY) for each disease or population group. This calculation provides the proportion of burden which can be attributed to each risk factor and enables ranking of all risk factors. The proportion of burden cannot be added together due to complex pathways and interactions between them (Australian Institute of Health and Welfare 2019).

Metropolitan

(East Metro, North Metro and South Metro)

Population Overview

- The metropolitan regions have a population of 2,043,248 people, which represents 79% of the total population in WA
- 2% of the metropolitan population are Aboriginal people
- 41% of the population is under 30 years of age.

The top 10 risk factors by sex

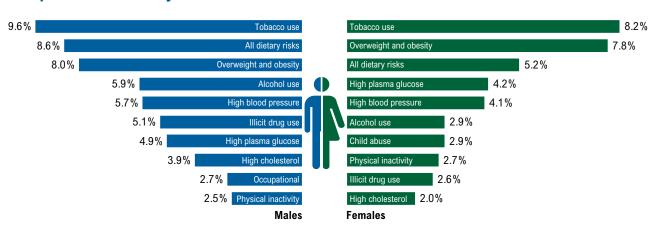


Figure 1. Contribution of each risk factor to the total burden of disease in the metropolitan regions by sex in 2015

Each percentage represents the proportion of total burden of disease in the metropolitan regions attributable to each risk factor. For example, 10% of the total disease burden for males in this region was attributable to tobacco use.

The leading risk factors per age group by sex

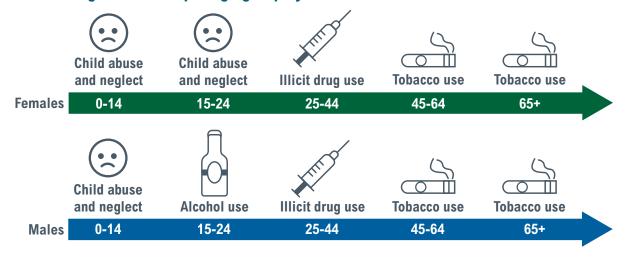
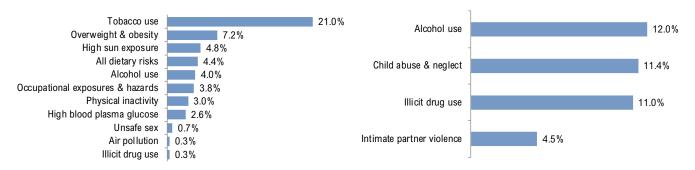


Figure 2. The leading risk factor contributing to the total burden of disease for each age group by sex in the metropolitan regions in 2015.



Mental and substance use disorders



Cardiovascular disease

Musculoskeletal conditions

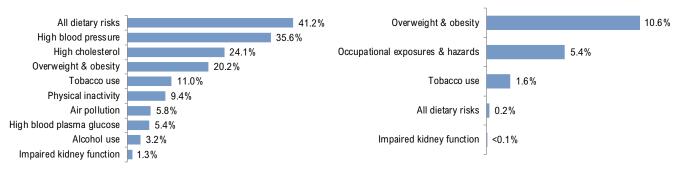


Figure 3. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the metropolitan regions in 2015

For example, 21% of the total burden caused by cancer in the metropolitan regions in 2015 can be attributable to tobacco use.

- The leading disease groups contributing to the total burden of disease in the metropolitan regions are cancer, mental and substance use disorders, cardiovascular disease and musculoskeletal conditions.
- Tobacco use and overweight and obesity are among the leading risk factors contributing to the burden caused by cancer, cardiovascular disease and musculoskeletal conditions.
- However, different risk factors contribute to the burden of disease depending on age groups and sex. For example, the leading risk factor contributing to the burden of disease in females aged 15-24 is child abuse and neglect, whereas in males of the same age group it is alcohol use.

Goldfields

Population Overview

- The Goldfields has a population of 60,536 people, which represents 2% of the total population in WA
- 12% of the Goldfields population are Aboriginal people
- 44% is under 30 years of age.

The top 10 risk factors by sex

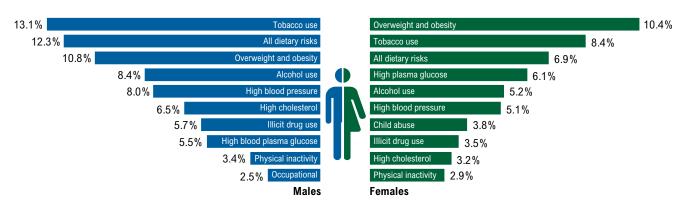


Figure 4. Contribution of each risk factor to the total burden of disease in the Goldfields by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Goldfields attributable to each risk factor. For example, 13.1% of the total disease burden for males in the Goldfields was attributable to tobacco use.

The leading risk factors per age group by sex

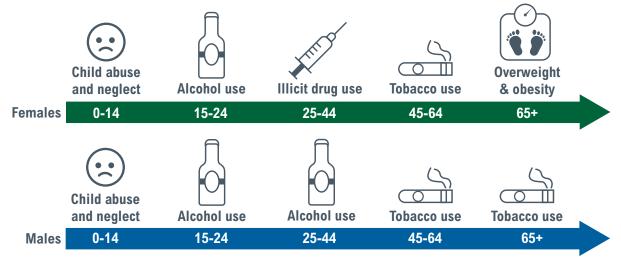
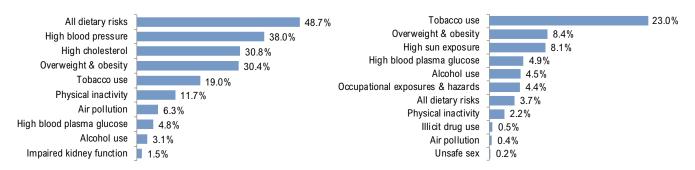


Figure 5. The leading risk factor contributing to the total burden of disease for each age group by sex in the Goldfields in 2015.



Cancer



Mental and substance use disorders

Injuries

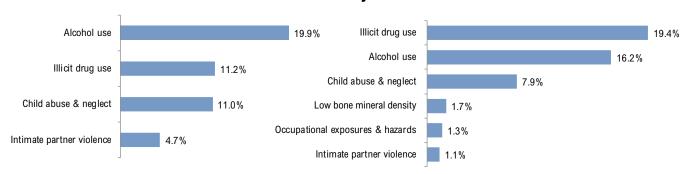


Figure 6. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Goldfields in 2015.

For example, 48.7% of the total burden caused by cardiovascular disease in the Goldfields in 2015 can be attributable to dietary risks.

- The leading disease groups contributing to the total burden of disease in the Goldfields are cardiovascular disease, cancer, mental and substance use disorders and injuries.
- Dietary risks and high blood pressure are the leading contributors to cardiovascular disease, whereas tobacco use is the biggest contributor to cancer. Alcohol use, illicit drug use and child abuse and neglect are among the leading risk factors contributing to mental and substance use disorders and injuries.
- Different risk factors also contribute to the burden of disease of different sexes and age groups. For example, the leading risk factor contributing to the burden of disease in females aged 25-44 is illicit drug use, whereas in males of the same age group it is alcohol use.

Great Southern

Population Overview

- The Great Southern has a population of 60,165 people, which represents 2% of the total population in WA
- 5% of the Great Southern population are Aboriginal people
- 36% is under 30 years of age.

The top 10 risk factors by sex

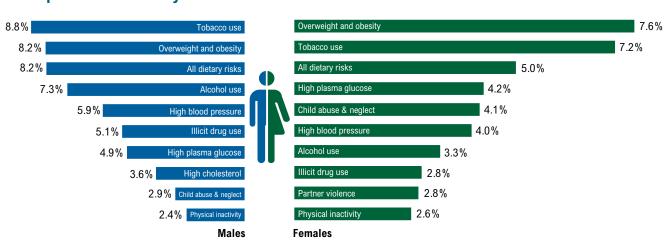


Figure 7. Contribution of each risk factor to the total burden of disease in the Great Southern by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Great Southern attributable to each risk factor. For example, 8.8% of the total disease burden for males in the Great Southern was attributable to tobacco use.

The leading risk factors per age group by sex

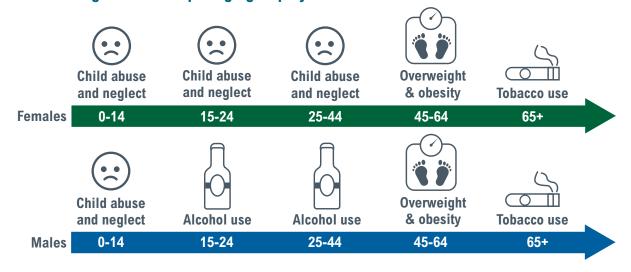


Figure 8. The leading risk factor contributing to the total burden of disease for each age group by sex in the Great Southern in 2015.

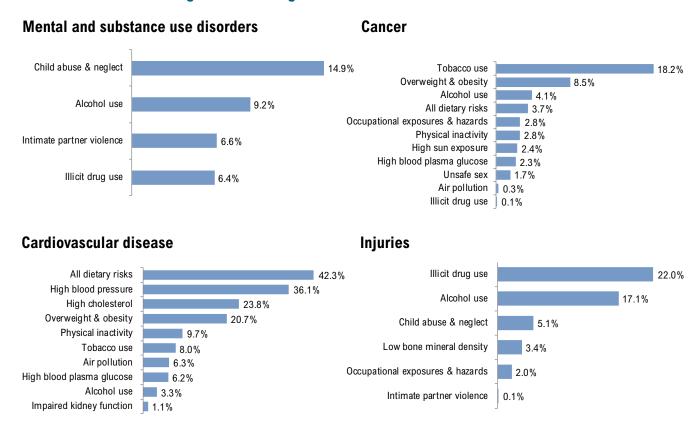


Figure 9. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Great Southern in 2015.

For example, 14.9% of the total burden caused by mental and substance use disorders in the Great Southern in 2015 can be attributable to child abuse and neglect.

- The leading disease groups contributing to the total burden of disease in the Great Southern are mental and substance use disorders, cancer, cardiovascular disease and injuries.
- Alcohol use is among the top three risk factors contributing to mental and substance use disorders, cancer and injuries. Dietary risks and high blood pressure are the leading risk factors contributing to cardiovascular disease.
- However, different risk factors contribute to the burden of disease depending on sex and age group. For example, the leading risk factor contributing to the burden of disease in females aged 15-44 is child abuse and neglect, whereas in males of the same age group is alcohol use.

Kimberley

Population Overview

- The Kimberley has a population of 38,801 people, which represents 1% of the total population in WA
- 46% of the Kimberley population are Aboriginal people
- 46% of the population is under 30 years of age.

The top 10 risk factors by sex

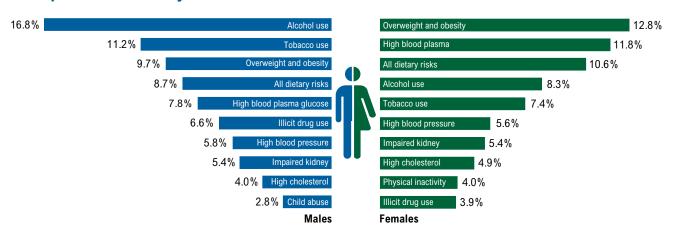


Figure 10. Contribution of each risk factor to the total burden of disease in the Kimberley by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Kimberley attributable to each risk factor. For example, 12.8% of the total disease burden for females in the Kimberley was attributable to overweight and obesity.

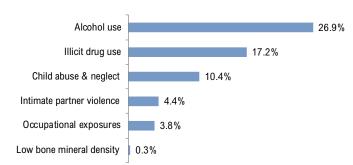
The leading risk factors per age group by sex

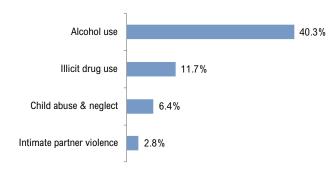


Figure 11. The leading risk factor contributing to the total burden of disease for each age group by sex in the Kimberley in 2015.

Injuries

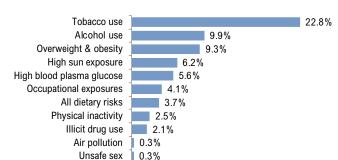
Mental and substance use disorders





Cancer

Cardiovascular disease



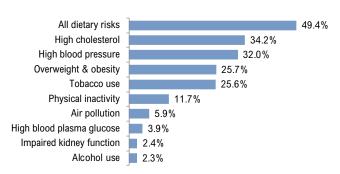


Figure 12. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Kimberley in 2015.

For example, 26.9% of the total burden caused by injuries in the Kimberley in 2015 can be attributable to alcohol use.

- The leading disease groups contributing to the total burden of disease in the Kimberley are injuries, mental and substance use disorders, cancer and cardiovascular disease.
- Alcohol use is among the leading risk factors contributing to injuries, mental and substance use disorders and cancer, whereas dietary risks are the leading contributor to cardiovascular disease.
- However, different risk factors contribute to the burden of disease of different sexes and age groups. For example, the leading risk factor contributing to the burden of disease in females aged 25-44 is dietary risks, whereas in males of the same age group it is alcohol use.

Midwest

Population Overview

- The Midwest has a population of 67,878 people, which represents 3% of the total population in WA
- 13% of the Midwest population are Aboriginal people
- 38% is under 30 years of age.

The top 10 risk factors by sex

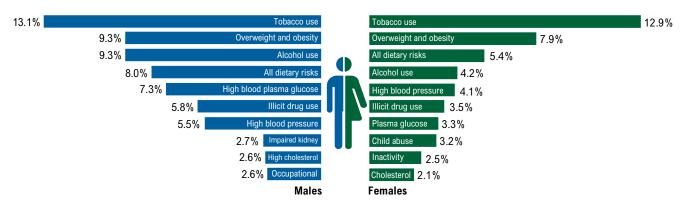


Figure 13. Contribution of each risk factor to the total burden of disease in the Midwest by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Midwest attributable to each risk factor. For example, 13.1% of the total disease burden for males in the Midwest was attributable to tobacco use.

The leading risk factors per age group by sex

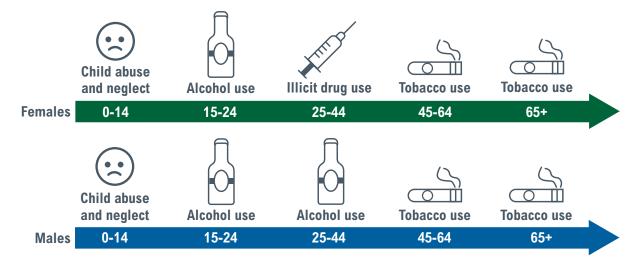


Figure 14. The leading risk factor contributing to the total burden of disease for each age group by sex in the Midwest in 2015.

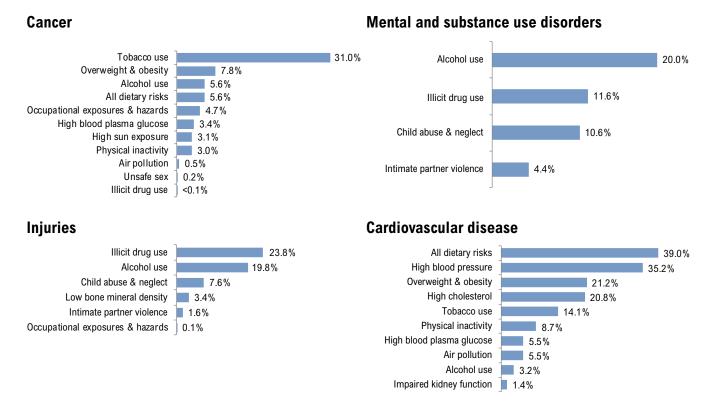


Fig 15. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Midwest in 2015.

For example, 31% of the total burden caused by cancer in the Midwest in 2015 can be attributable to tobacco use.

- The leading disease groups contributing to the total burden of disease in the Midwest are cancer, mental and substance use disorders, injuries and cardiovascular disease.
- Tobacco use is the leading contributor to cancer. Alcohol use, illicit drug use and child abuse and neglect are the leading risk factors for mental and substance use disorders and injuries. Dietary risks and high blood pressure are the leading risk factors for cardiovascular disease.
- However, different risk factors contribute to the burden of disease of different sexes and age groups. For example, the leading risk factor contributing to the burden of disease in females aged 25-44 is illicit drug use, whereas in males of the same age group it is alcohol use.

Pilbara

Population Overview

- The Pilbara has a population of 65,859 people, which represents 3% of the total population in WA
- 16% of the Pilbara population are Aboriginal people
- 41% is under 30 years of age.

The top 10 risk factors by sex

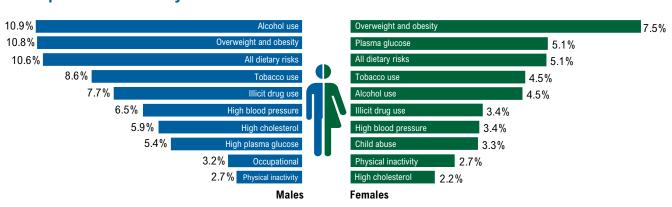


Figure 16. Contribution of each risk factor to the total burden of disease in the Pilbara by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Pilbara attributable to each risk factor. For example, 10.9% of the total disease burden for males in the Pilbara was attributable to alcohol use.

The leading risk factors per age group by sex

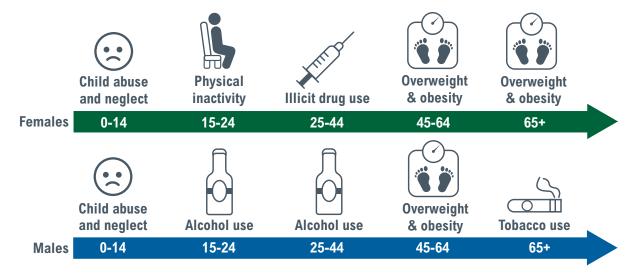
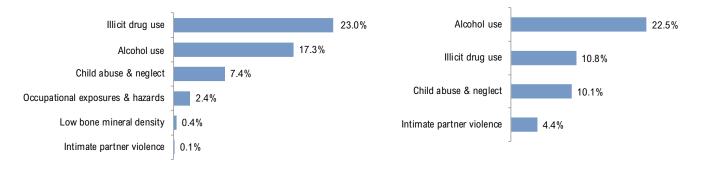


Figure 17. The leading risk factor contributing to the total burden of disease for each age group by sex in the Pilbara in 2015.

Injuries

Mental and substance use disorders



Cardiovascular disease

Musculoskeletal conditions

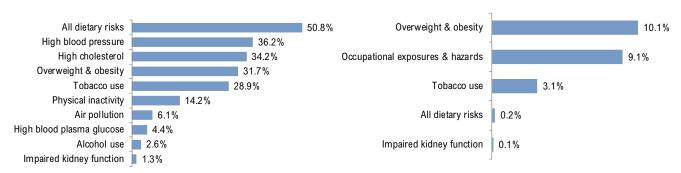


Figure 18. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Pilbara in 2015.

For example, 23% of the total burden caused by injuries in the Pilbara in 2015 can be attributable to illicit drug use.

- The leading disease groups contributing to the total burden of disease in the Pilbara are injuries, mental and substance use disorders, cardiovascular disease and musculosketelal conditions.
- Illicit drug use, alcohol use and child abuse and neglect are the leading contributors to injuries and mental and substance use disorders. Overweight and obesity was the leading risk factor contributing to musculoskeletal conditions. Dietary risks are the leading risk factors contributing to cardiovascular disease.
- However, different risk factors contribute to the burden of disease depending on sex and age groups. For example, the leading risk factor contributing to the burden of disease in females aged 15-24 is physical inactivity, whereas in males of the same age group it is alcohol use.

Southwest

Population Overview

- The Southwest has a population of 175,949 people, which represents 7% of the total population in WA
- 3% of the Southwest population are Aboriginal people
- 38% is under 30 years of age.

The top 10 risk factors by sex



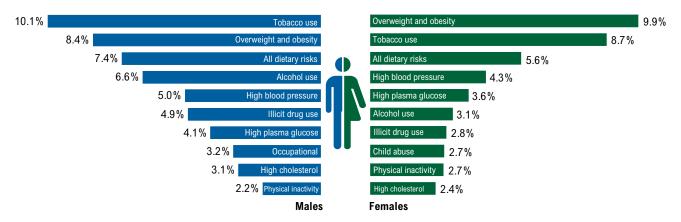


Figure 19. Contribution of each risk factor to the total burden of disease in the Southwest by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Southwest attributable to each risk factor. For example, 10.1% of the total disease burden for males in the Southwest was attributable to tobacco use.

The leading risk factors per age group by sex

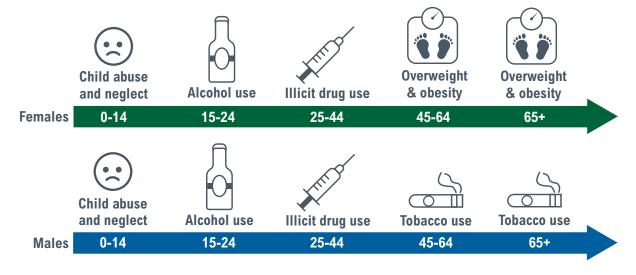
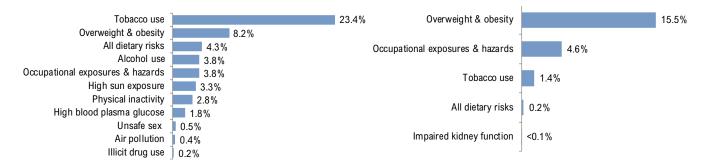


Figure 20. The leading risk factor contributing to the total burden of disease for each age group by sex in the Southwest in 2015.



Musculoskeletal conditions



Cardiovascular disease

Mental and substance use disorders

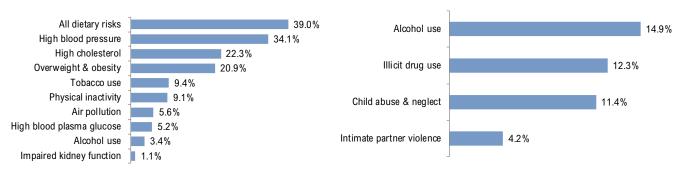


Figure 21. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Southwest in 2015.

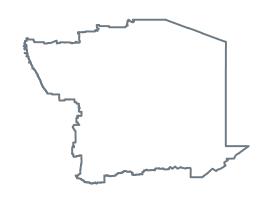
For example, 23.4% of the total burden caused by cancer in the Southwest in 2015 can be attributable to tobacco use.

- The leading disease groups contributing to the total burden of disease in the Southwest are cancer, musculoskeletal conditions, cardiovascular disease and mental and substance use disorders.
- Tobacco use is the leading risk factor contributing to cancer, whereas overweight and obesity is the leading one for musculoskeletal conditions. Dietary risks and high blood pressure are the leading risk contributors to the burden caused by cardiovascular disease, whereas alcohol use, illicit drug use and child abuse and neglect are the leading contributors to mental and substance use disorders.
- However, different risk factors contribute to the burden of disease depending on sex and age group. For example, the leading risk factor contributing to the burden of disease in females aged 45+ is overweight and obesity, whereas in males of the same age group it is tobacco use.

Wheatbelt

Population Overview

- The Wheatbelt has a population of 77,823 people, which represents 3% of the total population in WA
- 6% of the Wheatbelt population are Aboriginal people
- 35% is under 30 years of age.



The top 10 risk factors by sex

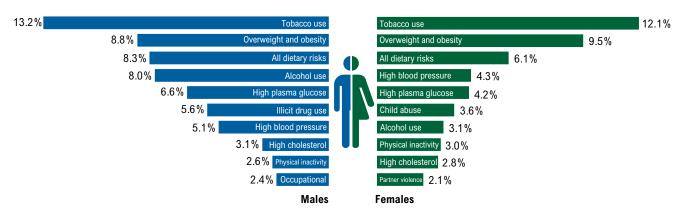


Figure 22. Contribution of each risk factor to the total burden of disease in the Wheatbelt by sex in 2015.

Each percentage represents the proportion of total burden of disease in the Wheatbelt attributable to each risk factor. For example, 13.2% of the total disease burden for males in the Wheatbelt was attributable to tobacco use.

The leading risk factors per age group by sex

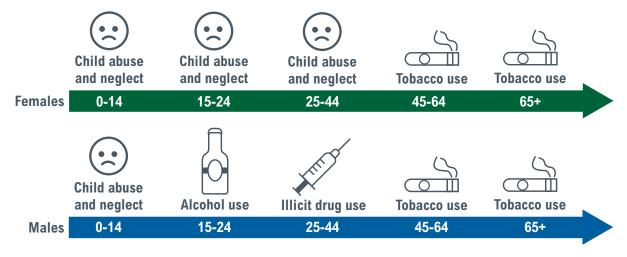


Figure 23. The leading risk factor contributing to the total burden of disease for each age group by sex in the Wheatbelt in 2015.

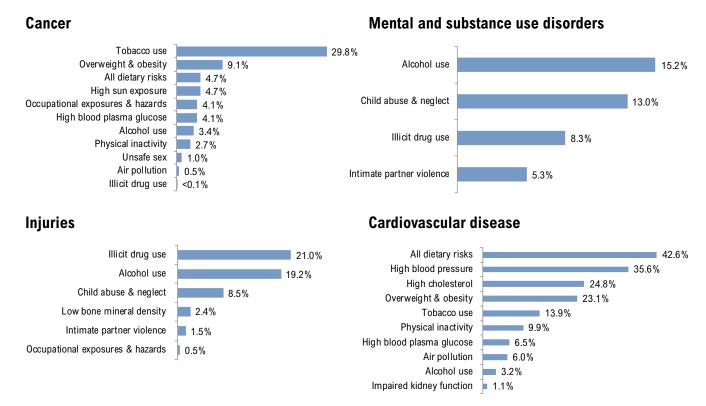


Figure 24. The proportion of total burden which can be attributable to each risk factor for the leading disease groups in the Wheatbelt in 2015.

For example, 29.8% of the total burden caused by cancer in Wheatbelt in 2015 can be attributable to tobacco use.

- The leading disease groups contributing to the total burden of disease in the Wheatbelt are cancer, mental and substance use disorders, injuries and cardiovascular disease.
- Tobacco use is the leading contributing risk factor to cancer, whereas dietary risks and high blood pressure are the leading contributors to cardiovascular disease. Alcohol and illicit drug use are the leading risk factors contributing to both mental and substance use disorders and injuries.
- However, different risk factors contribute to the burden of disease depending on sex and age groups. For example, the leading risk factor contributing to the burden of disease in females aged 25-44 is child abuse and neglect, whereas in males of the same age group it is illicit drug use.

Appendix 1. Leading risk factors (proportion %, age-standardised rate per 1000 population) contributing to total burden of disease per health region in WA, 2015

Rank	East Metro	North Metro	South Metro	Goldfields	Great Southern	Kimberley	Midwest	Pilbara	South West	Wheatbelt
1 st	Tobacco use (9.6%, 17.4)	Tobacco use (7.9%, 12.6)	Tobacco use (9.3%, 15.1)	Tobacco use (11.2%, 23.5)	Tobacco use (8.1%, 14.2)	Alcohol use (13.1%, 30.3)	Tobacco use (13.0%, 23.5)	Overweight & obesity (9.5%, 19.8)	Tobacco use (9.5%, 16.8)	Tobacco use (12.8%, 21.0)
2 nd	Overweight & obesity (8.4%, 15.1)	Overweight & obesity (7.3%, 11.7)	Overweight & obesity (8.2%, 13.4)	Overweight & obesity (10.7%, 21.9)	Overweight & obesity (7.9%, 14.2)	Overweight & obesity (11.1%, 33.6)	Overweight & obesity (8.7%, 15.9)	All dietary risks (8.4%, 16.4)	Overweight & obesity (9.1%, 16.3)	Overweight & obesity (9.1%, 15.8)
3 rd	All dietary risks (7.4%, 13.3)	All dietary risks (6.5%, 10.4)	All dietary risks (7.2%, 11.9)	All dietary risks (10.2%, 20.8)	All dietary risks (6.7%, 11.5)	High blood plasma glucose (9.6%, 32.6)	Alcohol use (7.1%, 15.1)	Alcohol use (8.3%, 11.3)	All dietary risks (6.5%, 11.7)	All dietary risks (7.4%, 12.5)
4 th	High blood pressure (5.1%, 9.3)	High blood pressure (4.8%, 7.7)	High blood pressure (5.1%, 8.2)	Alcohol use (7.1%, 13.1)	Alcohol use (5.4%, 14.1)	Tobacco use (9.5%, 29.7)	All dietary risks (6.9%, 12.7)	Tobacco use (7.0%, 15.6)	Alcohol use (5.0%, 10.7)	Alcohol use (6.0%, 14.9)
5 th	High blood plasma glucose (4.9%, 8.9)	Alcohol use (4.4%, 7.3)	Alcohol use (4.5%, 8.1)	High blood pressure (6.8%, 14.6)	High blood pressure (5.0%, 8.3)	All dietary risks (9.5%, 27.6)	High blood plasma glucose (5.6%, 10.4)	Illicit drug use (6.0%, 7.5)	High blood pressure (4.7%, 8.2)	High blood plasma glucose (5.6%, 9.8)
6 th	Alcohol use (4.6%, 8.2)	High blood plasma glucose (4.3%, 6.9)	High blood plasma glucose (4.5%, 7.4)	High blood plasma glucose (5.7%, 12.5)	High blood plasma glucose (4.6%, 8.1)	High blood pressure (5.7%, 18.2)	High blood pressure (4.9%, 9.0)	High blood plasma glucose (5.3%, 13.8)	Illicit drug use (3.9%, 9.2)	High blood pressure (4.8%, 7.9)
7 th	Illicit drug use (3.9%, 6.8)	Illicit drug use (3.8%, 6.3)	Illicit drug use (4.1%, 7.7)	High cholesterol (5.2%, 10.2)	Illicit drug use (4.0%, 11.4)	Illicit drug use (5.4%, 12.3)	Illicit drug use (4.9%, 10.7)	High blood pressure (5.2%, 12.0)	High blood plasma glucose (3.9%, 7.0)	Illicit drug use (4.0%, 11.6)
8 th	High cholesterol (3.1%, 5.7)	High cholesterol (2.8%, 4.5)	High cholesterol (3.1%, 5.2)	Illicit drug use (4.8%, 8.5)	Child abuse & neglect (3.5%, 9.5)	Impaired kidney function (5.4%, 18.1)	Physical inactivity (2.5%, 4.5)	High cholesterol (4.4%, 7.1)	High cholesterol (2.8%, 4.9)	High cholesterol (3.0%, 5.1)
9 th	Physical inactivity (2.6%, 4.8)	Physical inactivity (2.5%, 4.1)	Physical inactivity (2.7%, 4.4)	Physical inactivity (3.2%, 6.6)	High cholesterol (2.8%, 4.8)	High cholesterol (4.4%, 11.9)	High cholesterol (2.4%, 4.4)	Child abuse & neglect (2.9%, 4.2)	Physical inactivity (2.4%, 4.3)	Physical inactivity (2.7%, 4.6)
10 th	Child abuse & neglect (2.4%, 4.3)	Child abuse & neglect (2.4%, 4.0)	Child abuse & neglect (2.6%, 4.7)	Child abuse & neglect (2.7%, 4.9)	Physical inactivity (2.5%, 4.3)	Physical inactivity (3.0%, 9.4)	Child abuse & neglect (2.4%, 5.3)	Physical inactivity (2.7%, 5.9)	Occupational exposures & hazards (2.3%, 4.7)	Child abuse & neglect (2.7%, 7.6)

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