



Australian Government

**Australian Institute of
Health and Welfare**

Diabetes and disability

**Impairments, activity limitations, participation restrictions
and comorbidities**

DIABETES SERIES NO. 20



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**Australian Institute of
Health and Welfare**

*Authoritative information and statistics
to promote better health and wellbeing*

DIABETES SERIES

Number 20

Diabetes and disability: impairments, activity limitations, participation restrictions and comorbidities

Australian Institute of Health and Welfare
Canberra

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Abbreviations

ABS	Australian Bureau of Statistics
ADA	American Diabetes Association
AHS	Australian Health Survey
AIHW	Australian Institute of Health and Welfare
ASR	age-standardised rate
CHD	coronary heart disease
CI	confidence interval
CURF	confidentialised unit record file
DALY	disability-adjusted life year
ERP	estimated resident population
ICF	International Classification of Functioning, Disability and Health
IDF	International Diabetes Federation
LDL	low-density lipoprotein
RSE	relative standard error
SDAC	Survey of Disability, Ageing and Carers
WHO	World Health Organization

Symbols

–	nil or rounded to zero
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Summary

This report explores the association between diabetes and disability – comprising of impairments, activity limitations and participation restrictions – and its comorbidities. Using data from the 2009 Australian Bureau of Statistics (ABS) Survey of Disability Ageing and Carers (SDAC), it presents estimates of the number of people with diabetes and a disability.

In 2009, an estimated 827,020 people in Australia had diabetes. Of these, 43% reported that diabetes was the health condition causing them the most problems and 53% reported they had a disability.

People with diabetes and a disability

- People with diabetes had a higher prevalence of disability than people without diabetes (age-standardised rates of 39%, compared with 17%) and were more likely to have a severe or profound core activity limitation than people without diabetes (age-standardised rates of 14%, compared with 5%).
- The most common type of disability experienced by people with diabetes was restriction in physical activities or work (32% of people with diabetes).
- Among all people with loss of sight, 17% reported having diabetes.

People with a disability caused by diabetes

- Eleven per cent of people with diabetes (almost 90,000 Australians) reported they had a disability caused by diabetes.
- Fifty-nine per cent of those with a disability caused by diabetes were receiving treatment or medication but were still restricted in everyday activities.

Participation restrictions and assistance received

- Forty per cent of working-age people with diabetes and a disability said they were permanently unable to work, compared with 20% of people with a disability who did not have diabetes (using age-standardised rates).
- People with diabetes and a disability were more likely to receive assistance than other people with a disability (age-standardised rates of 62%, compared with 51%).

Other long-term health conditions

- Comorbidities were very common: 67% of people with diabetes aged under 60 and 91% of those aged 60 and over reported they had another long-term health condition.
- Ten per cent of people with diabetes reported having had a stroke and more than 15% reported having heart disease.
- People with diabetes reported higher rates of high blood pressure, high cholesterol, heart disease, stroke, depression, vision loss and kidney-related disorders than people without diabetes.

1 Introduction

Overview

- Diabetes has a considerable impact on the health and functional status of Australians, including on quality of life and life expectancy. It is one of the most common medical conditions in Australia and globally, and can cause a range of complications.
- It is estimated that around 4.6% of Australians have diabetes. Diabetes is the 6th leading cause of death in Australia. In 2011, diabetes contributed to 1 in 10 deaths and in 2010–11, diabetes contributed to 1 out of every 40 hospitalisations.
- Disability is an umbrella term for impairments, activity limitations and participation restrictions. One in 5 Australians, or around 4 million people, have a disability. Of these, 11% have diabetes.
- Diabetes can have an impact on functioning and cause disability. Complications due to diabetes are also a major cause of disability; diabetes is a leading cause of cardiovascular disease, blindness, kidney failure and lower limb amputation. Conversely, disabilities that lead to physical inactivity may increase the risk of a person developing diabetes.
- Due to the increasing prevalence of diabetes in Australia, the future burden of disability may be expected to rise. Although it is clear that diabetes is associated with an increased risk of disability, the magnitude of this association is unknown.

Global burden of diabetes

Globally, the prevalence of diabetes (Box 1.1) has increased dramatically, particularly in the past 3 to 4 decades, and diabetes is now one of the most common medical conditions. Whiting et al. (2011) estimated that, in 2011, 366 million people worldwide had diabetes, and this is expected to rise to 552 million by 2030. US projections suggest that, even if diabetes incidence rates level off, the prevalence of diabetes will continue to rise due to the ageing of the population (Boyle et al. 2010). In 2010, there were 1.3 million deaths due to diabetes worldwide, twice as many as in 1990 (Lozano et al. 2012).

Wider impact of diabetes

People with diabetes have an increased risk of developing a number of serious health problems, particularly if their diabetes is poorly controlled. Chronically high blood glucose levels can lead to serious diseases affecting the heart and blood vessels, eyes, kidneys and nerves. In addition, people with diabetes have a higher risk of developing infections. In many countries, diabetes is a leading cause of cardiovascular disease, blindness, kidney failure and lower limb amputation (IDF 2011). Maintaining blood glucose, blood pressure and cholesterol close to normal levels can help delay or prevent diabetes complications. If poorly controlled, diabetes and its complications can lead to increased medical costs, lost work days, disability and premature death (ADA 2013).

Box 1.1: Terminology

Incidence: the number of new cases (of an illness or event) occurring during a given period.

Prevalence: the number or proportion (of cases, instances) in a population at a given time.

Disability is an umbrella term, covering impairments, activity limitations and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered in executing an activity; while a participation restriction is a problem with involvement in any area of life (WHO 2011). Disability is thus not just a health problem. It represents a complex multi-factorial interaction between people with a disability and the society in which they live.

The disability-adjusted life year (DALY) is a measure of overall disease burden. It describes the number of years of life lost due to premature death, coupled with the years of 'healthy' life lost due to disability. According to the Global Burden of Disease Study 2010, the number of DALYs due to diabetes increased globally from 27.7 million to 46.8 million between 1990 and 2010 (Murray et al. 2012). This represents a 69% increase.

Diabetes has a major impact on the health of Australians. The primary data source for this report is the 2009 Australian Bureau of Statistics (ABS) Survey of Disability Ageing and Carers (SDAC). According to the survey 827,020 people reported they had diabetes as a current and long-term condition (Box 1.2). As the 6th leading cause of death in Australia, diabetes is responsible for significant personal and economic burden (AIHW 2012a). The latest available estimates from 2003 show that, when the increased risk of coronary heart disease and stroke that diabetes carries with it was included, diabetes was responsible for 8.3% of the total burden of disease and injury in Australia (AIHW: Begg et al. 2007).

In 2011, diabetes contributed to 1 out of every 10 deaths (ABS 2013b). In 2010–11, it was recorded in 1 out of every 40 hospitalisations in Australia (AIHW 2013). Diabetes is a commonly associated condition with other causes of death, in particular for deaths involving chronic and unspecified kidney failure (20%), coronary heart disease (CHD) (16%) and asthma (16%). CHD is indicated as contributing to 47% of deaths involving diabetes, and hypertensive diseases feature as a leading contributor to 30% of diabetes deaths. Cerebrovascular diseases contributed to 20% of diabetes deaths (AIHW 2012c).

Box 1.2: Estimating diabetes prevalence

- Diabetes prevalence measures are based on self-reported survey data. The accuracy of this information relies on respondents being aware of, and accurately reporting, their health status. Undiagnosed cases are not picked up by self-reported surveys. This leads to a general underestimate of the number of people with diabetes. The wording of survey questions can also influence responses and lead to differences between data sources.
- The primary data source for this report is the 2009 SDAC. This survey captures information about disability and various health conditions including diabetes. According to the 2009 SDAC, an estimated 827,020 people had diabetes as a current and long-term condition based on self-reports (Table A1.1).
- By comparison, the ABS 2011–12 Australian Health Survey (AHS) estimated that 999,000 people aged 2 and over had been diagnosed with diabetes at some point in their lives (ABS 2012).
- The two surveys differed in their sample population: the 2009 SDAC included people living in cared-accommodation, whereas the 2011–12 AHS did not. The SDAC also allows for more detailed analysis of the types of disabilities and associated health conditions, but the AHS does not.

Personal impact of diabetes

To date, there has been limited research into the impact of disability on people with diabetes in Australia. This report sets out to bridge some gaps by examining the relationship between components of disability and diabetes in Australia.

Although extensive research is available on the complications of diabetes, there is less analysis of the association between disability and diabetes, both in Australia and overseas. However, there is a body of literature that highlights a correlation between diabetes, disability and the impact on those who live with this, as well as on their carers.

Wong et al. (2013) undertook a systematic review and meta-analysis of 26 international studies that looked at the association between diabetes and physical disabilities. The meta-analysis found that people with diabetes had an increased risk of mobility disability (odds ratio 1.71), core activity limitations (odds ratio 1.65) and limitations in the activities of daily living (odds ratio 1.82). Although the mechanism by which high blood glucose levels lead to disability remains unclear, longitudinal studies identified in the systematic review provide some insight into possible causal pathways.

For example, Volpato et al. (2002) found that women with diabetes were more likely to have a cardiovascular condition, severe peripheral nerve problems and visual impairment, compared with people without diabetes. The study concluded that a wide range of impairments and comorbidities explains the diabetes–disability relationship, suggesting that the mechanism for such an association is multi-factorial.

Breton et al. (2013) looked at the risk and magnitude of lost productivity due to absenteeism and early retirement among individuals with Type 2 diabetes (Box 1.3) in the workforce, compared with those without the disease. People with diabetes had significantly more absences from work than those without diabetes. People with diabetes had between 5.4 and

18.1 days of absenteeism per year, compared with 3.4 to 8.7 days for people without diabetes. People with diabetes were also more likely to retire early than those without diabetes, with 7.2% of men and 12.8% of women with diabetes stopping work early because of illness, compared with 2.2% of men and 3.3% of women without diabetes.

Participation in everyday activities is challenging for people with diabetes and a disability, compared with those with diabetes but without a disability. This is reflected in lower employment rates, higher rates of absenteeism from work and lower levels of income (Songer 1995). These issues may be related to the presence of a disability among people with diabetes, and therefore it does not directly suggest that having diabetes alone leads to greater restrictions in everyday activities.

There is other research available to support these findings. Gregg et al. (2002) concluded that disability (which was defined as the inability to walk, climb 10 steps, do housework, shop and cook meals), was twice as common among females with diabetes as in those without diabetes.

Just as people with diabetes may have an increased risk of developing a disability (Gregg & Brown 2003), people with certain disabilities may be more prone to develop diabetes because of behavioural risk factors such as physical inactivity (Havercamp 2004).

Diabetes

Diabetes mellitus (diabetes) is a chronic condition marked by high levels of glucose in the blood. This condition is caused either by the inability to produce insulin (a hormone produced by the pancreas to control blood glucose levels), or by the body not being able to use insulin effectively, or both (AIHW 2012a). Box 1.3 shows the main types of diabetes, but in the 2009 SDAC the specific type of diabetes people have was not recorded. Therefore, in this report, diabetes refers to all forms of diabetes considered collectively. People often develop diabetes some time before diagnosis. It is therefore difficult to measure accurately the true prevalence due to a high burden of undiagnosed disease (Box 1.2). For example, in Victoria, there was 1 undiagnosed case of diabetes for every 3 diagnosed cases (Department of Health 2013).

Box 1.3: Main types of diabetes

Type 1 diabetes is an auto-immune condition that usually first occurs in children or young adults, although it can start at any age (Craig et al. 2011). It is marked by the inability to produce any insulin, and those affected need insulin replacement for survival. It accounts for about 10% of all diabetes cases.

Type 2 diabetes is the most common form of diabetes, accounting for about 85–90% of all cases. It occurs mostly in people aged 50 and over, and is uncommon in childhood, although there is evidence that it may be increasing among younger adults. People with Type 2 diabetes produce insulin, but may not produce enough of it or cannot use it effectively. Type 2 diabetes is influenced by both non-modifiable risk factors, such as age, family history and ethnic background, and modifiable factors such as obesity, physical inactivity and unhealthy diet (Shaw & Chisholm, 2003).

Gestational diabetes is a form of diabetes that develops in some women during pregnancy. It involves higher blood sugar levels appearing for the first time during pregnancy in women not previously diagnosed with other forms of diabetes. Although it usually disappears after the baby is born, it can recur in later pregnancies and is an indicator of higher risk of developing Type 2 diabetes later in life.

Diabetes requires ongoing monitoring and management to minimise its impact. People with diabetes, and their carers, need to be aware of eating habits, weight control and blood glucose levels to prevent or reduce complications of the disease. Some people with diabetes need to take insulin on a regular basis. These requirements can be particularly challenging for people living with a disability. Diabetes, especially if it is poorly controlled or left undiagnosed, can lead to a range of health complications, which can themselves lead to disabilities. These include:

- **foot complications** – diabetes is associated with nerve damage and poor circulation in the lower limbs, either of which may lead to foot ulcers and infections, and eventually to amputations (Payne 2000).
- **eye disease** – diabetes leads to an increased risk of diabetic retinopathy (a condition affecting the blood vessels at the back of the eye). The development of retinopathy is strongly related to the length of time diabetes has been present and the degree of blood glucose control (AIHW 2008). Other eye diseases associated with diabetes are

glaucoma and cataract. Diabetic eye disease is the leading cause of blindness in adults under 75 in developed countries (Williams et al. 2004).

- **kidney disease** – high levels of blood glucose damage the kidneys, resulting in a condition called diabetic nephropathy, the leading cause of end-stage kidney disease in Australia (AIHW 2009a). This may lead to treatment with dialysis or a kidney transplant.
- **cardiovascular disease** – including conditions such as hypertension, angina, coronary heart disease and stroke. People with diabetes have twice the risk of cardiovascular disease, compared with the general population (AIHW 2011b). It is the leading cause of death in people with diabetes. They have higher mortality as a result of their first heart attack or stroke event and poorer outcomes in the months and years following such an event, compared with the general population (Buse et al. 2007).
- **diabetic ketoacidosis** – a condition caused by very high blood glucose levels and the accumulation in the blood of substances called ketones. Without enough insulin, the body's cells cannot use glucose for energy. To compensate for this the body begins to burn fat for energy instead. This leads to the accumulation of ketones in the blood, which in turn also appear in the urine.
- **hyperosmolar non-ketotic coma** – a serious complication that can happen to a person with Type 2 diabetes who is ill or stressed. This type of diabetic coma occurs when high blood sugar leads to the body becoming severely dehydrated.

These complications can lead to disability and are the major causes of deaths and hospitalisations among people with diabetes. Good management of diabetes can prevent or delay the development of complications and associated disabilities.

Potential complications related to the treatment of diabetes

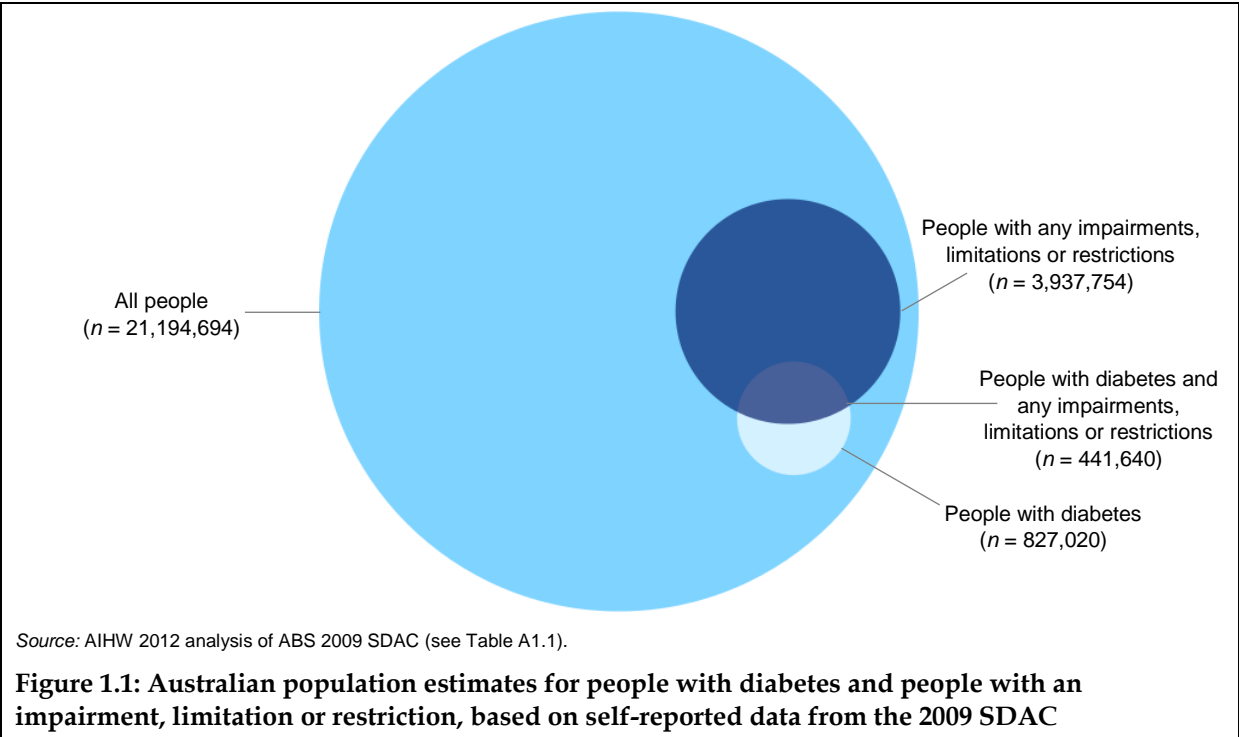
Hypoglycaemia is a blood glucose level below the normal range. It is a common and potentially dangerous complication for people with diabetes. Hypoglycaemia is not directly caused by diabetes, but is a consequence of treatment with excessive doses of insulin or certain oral medications, and under-consumption of carbohydrates or missing a meal. If the medication dose is not well balanced with food and activity levels, blood glucose can drop too low and cause a hypoglycaemic episode. It can produce a variety of symptoms arising from an inadequate supply of glucose to the brain, ranging from light headedness to 'blackouts, fits or loss of consciousness' and permanent brain damage or death.

Survey of Disability, Ageing and Carers (SDAC)

The primary objective of the SDAC is to collect information about people with a disability, older people (that is, those aged 60 and over) and people who provide assistance to people with a disability and/or older people. The 2009 SDAC does not contain specific data elements on diabetes-related disability, but it is the best available resource for estimating disability prevalence among people with diabetes.

The SDAC is an Australia-wide household survey, covering urban and rural areas in all states and territories. The 2009 survey was conducted from April to December 2009 and collected information on people living in private households, non-private dwellings (such as hotels and boarding houses) and cared-accommodation. The survey population was made up of 64,000 fully responding persons for the household component and 9,500 for the cared-accommodation component (ABS 2011). Survey participants were interviewed about their long-term conditions, restrictions or disabilities, type and frequency of assistance received, and the providers of assistance.

Survey responses were weighted to estimate results for the total Australian population. It was estimated that nearly 4 million people have a disability and 827,020 people have diabetes as a current and long-term condition (Figure 1.1, see also Box 1.2). Just over half of those with diabetes have a disability, while 11% of people with a disability have diabetes.



Throughout the report, estimates for males and females are provided separately, where possible, and some crude rates are broken down by age groups. Most of the analyses compare people with diabetes with those without diabetes. Excluding healthy individuals (60% of Australians don't have any long-term health conditions) from the analyses would alter the scope of this report and lead to less meaningful results. Therefore, 'people without diabetes' includes anyone without diabetes, regardless of whether or not they had any other long-term health conditions.

Age-standardised rates are presented to compare estimates among people with and without diabetes, where appropriate, as disabilities are more prevalent in older age groups and, of those surveyed, people with diabetes were on average older than those without diabetes. The significance of the difference between these two groups was tested using 95% confidence intervals around estimates. Some of the analyses were limited by small sample sizes in the survey population, resulting in large relative standard errors (RSE) and wide confidence intervals.

Being a self-reported study, the 2009 SDAC requires people with diabetes to first be aware of, and also understand, the potential impacts of their diabetes. How people with diabetes perceive their disease and its potential impact on their disability is uncertain.

It is difficult to accurately measure the prevalence of diabetes, as people will often develop the disease some time before diagnosis. This leads to a general underestimation of the number of people with diabetes in self-reported health surveys. Similarly, accurately measuring the prevalence and cause of a disability is difficult. Standard questions are used in population-based surveys to identify people with impairments, activity limitations and participation restrictions. The subset of people who identified diabetes as the cause of their disability is limited due to the condition being identified through self-reported information.

Therefore, because of data limitations, this report mainly looks at people with diabetes who also have a disability, rather than attributing the disability to diabetes. Chapter 4 looks at a subset of this population who reported that diabetes was the cause of their disability, but this information needs to be interpreted with caution.

Disability

Disability refers to the impairments, activity limitations or participation restrictions resulting from an individual's health conditions (Box 1.4). It can be the result of genetic disorders, illnesses, accidents, ageing or a combination of these factors. A person's experience of disability is the result of the nature and severity of their health condition, as well as their own personal attributes and the environmental circumstances in which they live (AIHW 2011a). Increasingly, disability is recognised as something that affects most people at different stages of their lives and is best understood as a continuum of having no impairment or limitation to the complete loss of functioning or ability to complete a task.

The major sources of disability data in Australia are the Census of Population and Housing and the SDAC. Although the Census provides estimates on the number of people with a need for assistance, detailed population statistics about disability in Australia are collected by the ABS in the SDAC. According to the 2009 SDAC, about 1 in 5 Australians reported they had some form of disability (Table A1.1). In this survey, people with a disability were defined as those having at least 1 of 17 limitations, restrictions or impairments that lasted, or were likely to last, for 6 months or more, and restricted everyday activities (Box 1.4). The survey also defines specific concepts and terms in relation to health conditions, disability severity, assistance needs and care providers (Box 1.5).

Box 1.4: Defining disability in the 2009 SDAC

A person was considered to have a disability if they report they have an impairment, limitation or restriction, which has lasted, or is likely to last for at least 6 months and restricts everyday activities. There are 4 levels of core activity limitations (mild, moderate, severe and profound). These classifications are based on a person's report of overall level of limitation in the core activities of communication, mobility and self-care. Disabilities can be broadly grouped into sensory, intellectual, physical and psychological. This includes:

Sensory

- loss of sight (not corrected by glasses or contact lenses)
- loss of hearing where communication is restricted or an aid used
- speech difficulties

Intellectual

- difficulty learning or understanding

Physical

- chronic or recurrent pain or discomfort causing restriction
- shortness of breath or breathing difficulties causing restriction
- blackouts, fits or loss of consciousness
- incomplete use of arms or fingers
- difficulty gripping or holding things
- incomplete use of feet or legs
- restriction in physical activities or in doing physical work
- disfigurement or deformity

Psychological

- nervous or emotional condition causing restriction
- mental illness or condition requiring help or supervision
- long-term effects of head injury, stroke or other brain damage causing restriction

Other

- receiving treatment or medication for any other long-term conditions or ailments and still restricted in everyday activities
- any other long-term conditions resulting in a restriction in everyday activities.

Impairments are 'problems in body function or structure such as significant deviation or loss'. Activity **limitations** are 'difficulties an individual may have in executing activities'. Participation **restrictions** are 'problems an individual may experience in involvement in life situations' (WHO 2011).

Box 1.5: SDAC concepts and terms

Principal health condition (health condition causing the most problems)

- It is possible for a person to report multiple health conditions. When a person has more than one health condition, the **main health condition** is the one they nominate as causing the most problems.
- Note: main health condition is referred to as **principal health condition** in this report.

Condition causing disability

- A person can have a disability that is not related to a particular health condition, and vice versa. Where the respondent indicated a causal relationship between their health condition and disability, they are reported as the **condition causing disability**.

Severe or profound limitation

- The survey collected information about whether or not respondents needed help with various activities, had difficulty undertaking activities or used aids or equipment. Activities related to mobility, communication and self-care are referred to as **core activities of daily living**.
- A person who sometimes or always needs help with one or more of these activities is referred to as having **severe or profound core activity limitations**. Sometimes shortened to **severe or profound limitation** in this report, this is a commonly used measure to describe disability at the higher end of the scale.

Assistance and carers

- People with a disability may receive help with everyday activities from **formal** or **informal** assistance providers. Formal assistance includes organised services from government and private sectors. Informal assistance may be provided by family, friends or neighbours.
- Someone who provides ongoing informal assistance is referred to as a **carer** in the survey. A **primary carer** is the carer, aged 15 or over, who provides the most assistance to a person with a disability, and specifically helps with core activities of daily living.
- Note: **primary carer** in this report refers only to the primary carer whose main recipient is a co-resident (that is, living in the same household).

Aim and structure of the report

This report examines data and research evidence relating to two separate groups:

- people with diabetes who have a disability
- people with a diabetes caused disability.

It should be noted that there are no Australian data specifically on diabetes-related disability.

The key research questions considered in this report are:

- How common are diabetes and its associated comorbidities?
- How common are disabilities (any impairment, limitation or restriction) among people with diabetes and how does this compare with people without diabetes?
- Do people with diabetes and a disability differ from other people with a disability by age, sex and other population characteristics?
- What types of impairments, limitations or restrictions do people with diabetes have?
- Do people with diabetes and a disability differ from other people with a disability with regards to activity participation and assistance received?

The findings have implications for the delivery of diabetes services and treatment in Australia as well as for models of care.

Chapter 1 provides the background and context to the analyses presented in the following chapters, including information about the association between diabetes and disability, and the potential impact this has on people's everyday lives. This introductory material also discusses the principal data source used in this report.

Chapter 2 looks at the impact of diabetes, including the prevalence of diabetes in Australia and comorbidities commonly occurring with diabetes.

Chapter 3 examines whether people with diabetes are more likely to have a disability than other Australians and the types of impairments, limitations or restrictions they experience.

Chapter 4 looks at diabetes-related disabilities by focusing on the population who reported that diabetes was the cause of their disability.

Chapter 5 explores the influence that diabetes and disabilities have on restrictions on everyday life, assistance received and the demands on carers.

Chapter 6 highlights the key findings from this report.

2 How common are diabetes and its associated comorbidities?

Key points

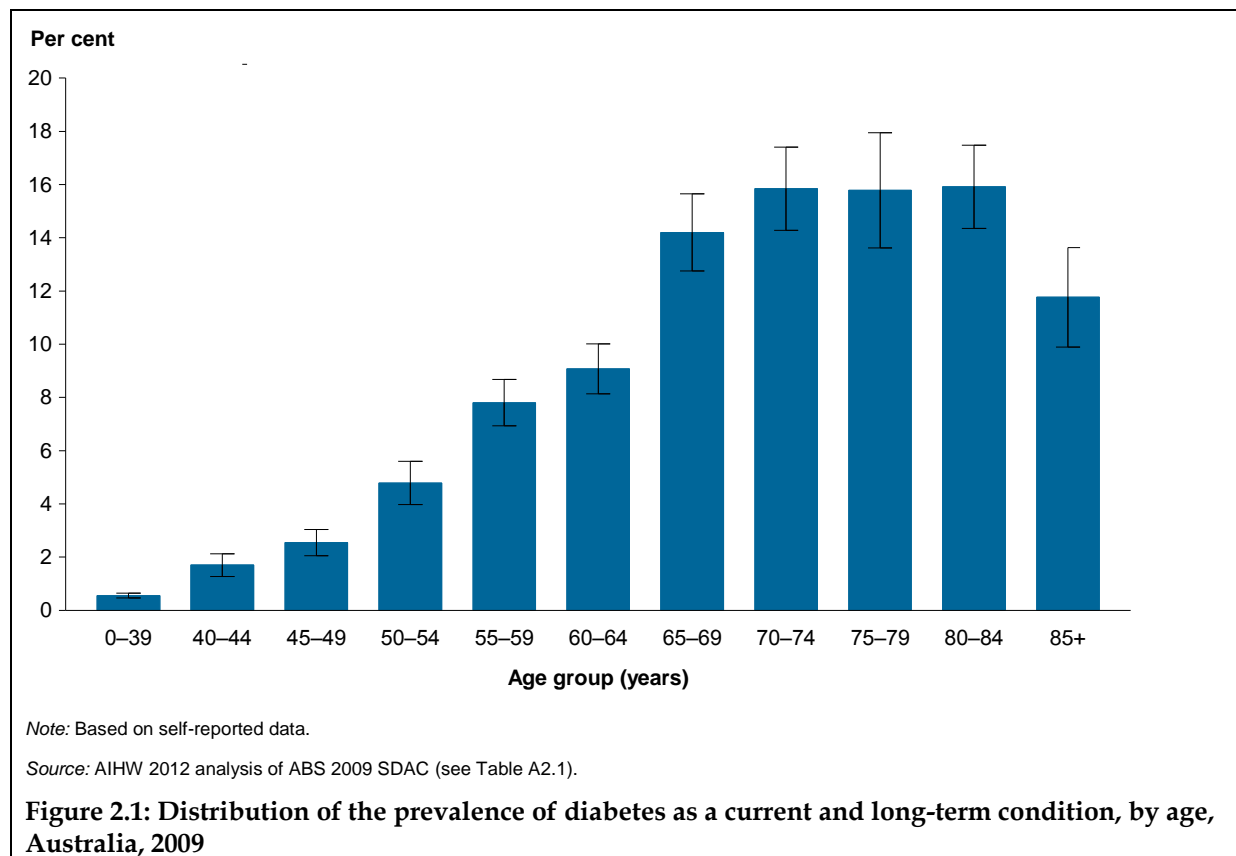
- In 2009, an estimated 827,020 people had diabetes.
- The prevalence of diabetes is much higher among older people (especially those aged 65–84) and very low for those aged under 40.
- Diabetes was more prevalent in people with lower education levels (age-standardised rates of 6% for those who completed Year 10 or less, 5% for those who completed Year 11 or Year 12, 5% for those who completed a certificate or diploma and 4% for those who completed a bachelor degree or above).
- Comorbidities are very common: 67% of people with diabetes aged under 60 and 91% of those aged 60 and over reported they had another long-term health condition.
- People with diabetes aged over 60 were less likely to say diabetes was their principal health condition, with arthritis, back problems and cardiovascular disease causing the most problems.
- Ten per cent of people with diabetes reported having had a stroke and more than 15% reported having heart disease.
- People with diabetes reported they had higher rates of high blood pressure, high cholesterol, heart disease, stroke, depression, vision loss and kidney-related disorders than people without diabetes.

This chapter begins by describing people with diabetes and whether they consider it to be their principal health condition (health condition causing the most problems). It goes on to explore their co-existing health conditions, focusing on comorbidities that commonly occur with diabetes.

Prevalence of diabetes

Based on self-reported information in the 2009 SDAC, an estimated 827,020 people (3.9% of Australians) had diabetes. Of these, 53% were male and 47% were female (Table A2.1). Diabetes is much more common among older people than younger people (Figure 2.1).

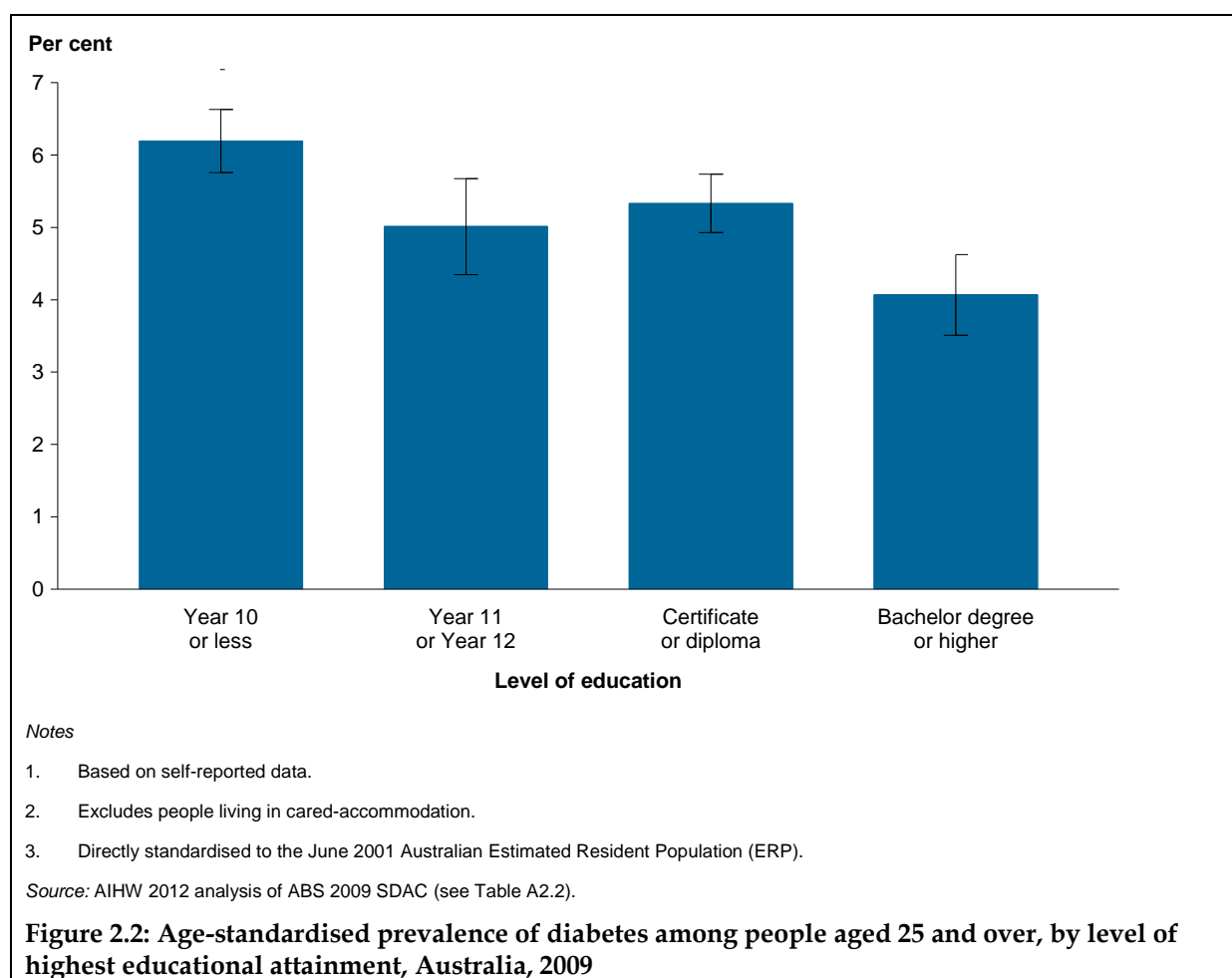
These estimates are conservative, as not all people with diabetes know that they have the disease, and not all people with diabetes consider it a current and long-term condition and so would not have reported it. This can be due to a lack of awareness or diagnosis of the disease or the way the questions were phrased in the survey, or a combination of both (see Box 1.2 for more detail).



Diabetes prevalence by educational attainment

Socioeconomic factors have a strong association with health. Education level may be used as a proxy measure for socioeconomic status. The level of highest educational attainment was captured in the survey for people living in households.

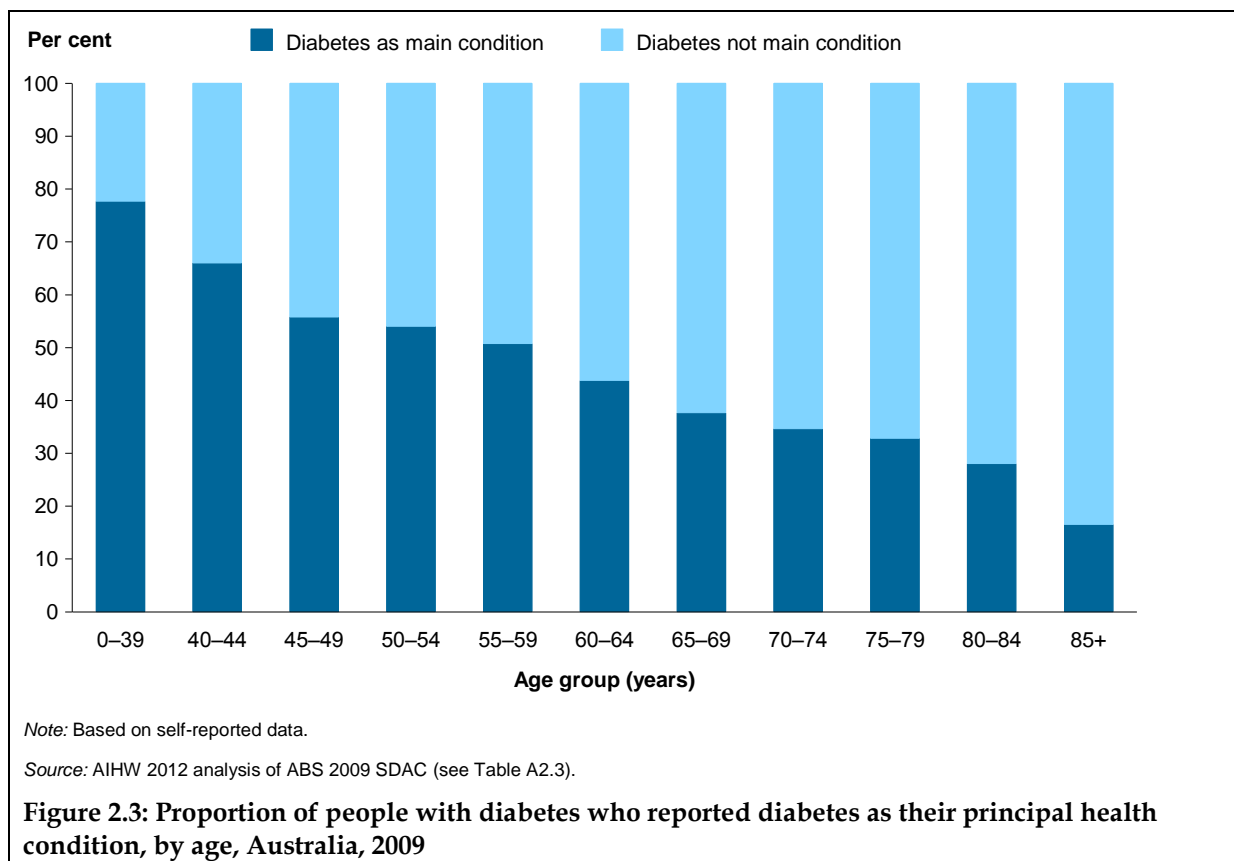
Diabetes was more common in people who did not finish high school than in people who completed a university degree (Table A2.2). After adjusting for differences in age, the prevalence of diabetes in people who completed Year 10 or below was significantly higher than in any other group (Figure 2.2). The higher prevalence of diabetes among people with the lowest level of educational attainment may be related to higher levels of risk factors for Type 2 diabetes in that group, such as physical inactivity, smoking and alcohol consumption (AIHW 2012a).



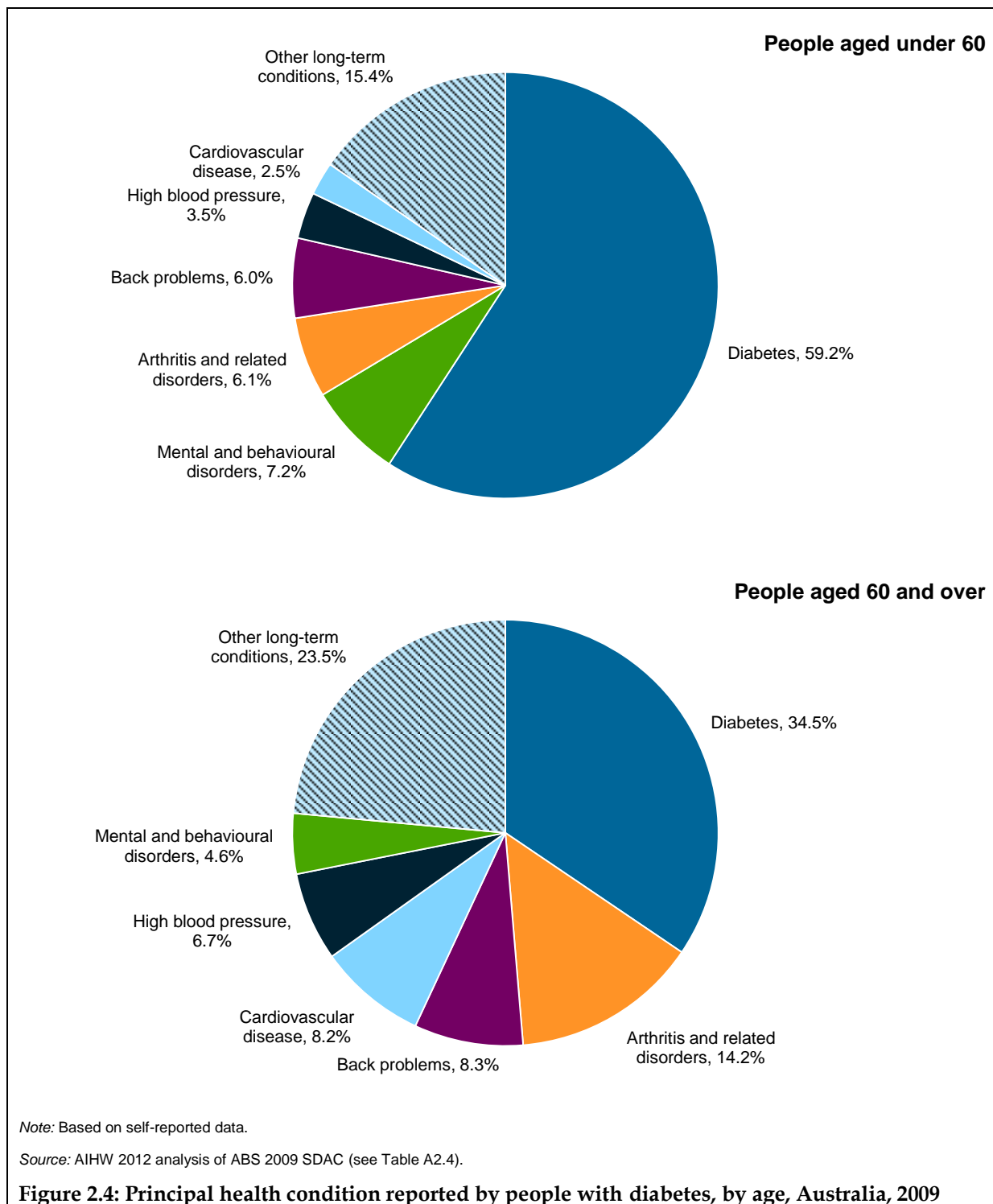
Diabetes as the principal health condition

Of all people with diabetes, 43.3% considered that diabetes was their principal health condition (Table A2.3). People with diabetes aged 60 and over were less likely to report it as their principal health condition (Figure 2.3). This may be because of the presence of co-existing health conditions associated with diabetes or because they have other health conditions that are more debilitating.

The increasing presence of co-existing health conditions with age is evident in the 2009 SDAC. Of people with diabetes aged under 60, 66.8% reported that they had another long-term health condition, compared with 91.5% of people with diabetes aged 60 and over (Table A2.4).



Just as people may have their diabetes under control or be unaware that they have diabetes, they may also underestimate its burden on their overall health, compared with other health conditions. The type of other health conditions that people with diabetes reported as their principal health condition varied with age. Among people with diabetes aged under 60, mental and behavioural disorders (7.2%) were the second most commonly reported principal health condition after diabetes (Figure 2.4). By comparison, among people with diabetes aged 60 and over, arthritis (14.2%), back problems (8.3%) and cardiovascular disease (8.2%) were the other conditions commonly reported as causing the most problems.



Prevalence of selected comorbidities

Diabetes is related, to and associated with, many other health conditions. Comorbidities can also be risk factors for diabetes-related complications or other health conditions, and can lead to a disability. Based on the health conditions collected in the 2009 SDAC, this section looks at the following comorbidities commonly occurring with diabetes: high blood pressure, high cholesterol, heart disease, stroke, depression, vision loss and kidney-related disorders.

In this chapter, we examine the associated and co-existing self-reported health conditions commonly occurring with diabetes, regardless of whether they were related to their diabetes.

As reported by Speight et al. (2011), 41% of people with diabetes in Australia reported that they had at least one diabetes-related complication, mainly macrovascular complications (for example, heart disease, peripheral vascular disease, stroke and retinopathy).

High blood pressure (also known as hypertension) can contribute, or lead, to the development of diabetes complications including cardiovascular disease, kidney disease and diabetic eye disease (AIHW 2008).

People with diabetes, particularly those with Type 2 diabetes (Box 1.3), often have high levels of low-density lipoprotein (LDL) cholesterol ('bad' cholesterol) (AIHW 2008). A high level of LDL cholesterol is a risk factor for coronary heart disease and stroke (AIHW 2011b).

There is also growing evidence of an association between long-term health conditions and depression (Patten et al. 2005). Australians with diabetes have a higher prevalence of poor mental health and wellbeing than those without diabetes (AIHW 2011c).

All selected comorbidities

Comorbidities were very common among people with diabetes, with 63.9% reporting having at least one of the following health conditions: high blood pressure, high cholesterol, heart disease, stroke, depression, vision loss and kidney-related disorders (Table A2.5). A similar proportion of males and females with diabetes had the selected comorbidities (62.2% and 65.8%, respectively). This compares with 15.6% of people without diabetes who reported having at least one of the selected comorbidities (Table A2.6). The age-standardised rate of any selected comorbidity was significantly higher in people with diabetes than in people without diabetes (50.1%, compared with 15.6%; Table A2.7).

High blood pressure and high cholesterol

Nearly half of those with diabetes (46.9%) reported they had high blood pressure and nearly one-quarter (22.3%) reported they had high cholesterol (Table A2.5). These two conditions were more common in females than males with diabetes, but the difference was not statistically significant. In those without diabetes, 9.6% reported they had high blood pressure and 3.6% had high cholesterol (Table A2.6).

After adjusting for age, people with diabetes still had a significantly greater rate of high blood pressure and high cholesterol than those without diabetes (Figure 2.5). High blood pressure was 3.9 times as likely in people with diabetes as in those without diabetes, and high cholesterol was 4.6 times as likely in people with diabetes as in those without diabetes.

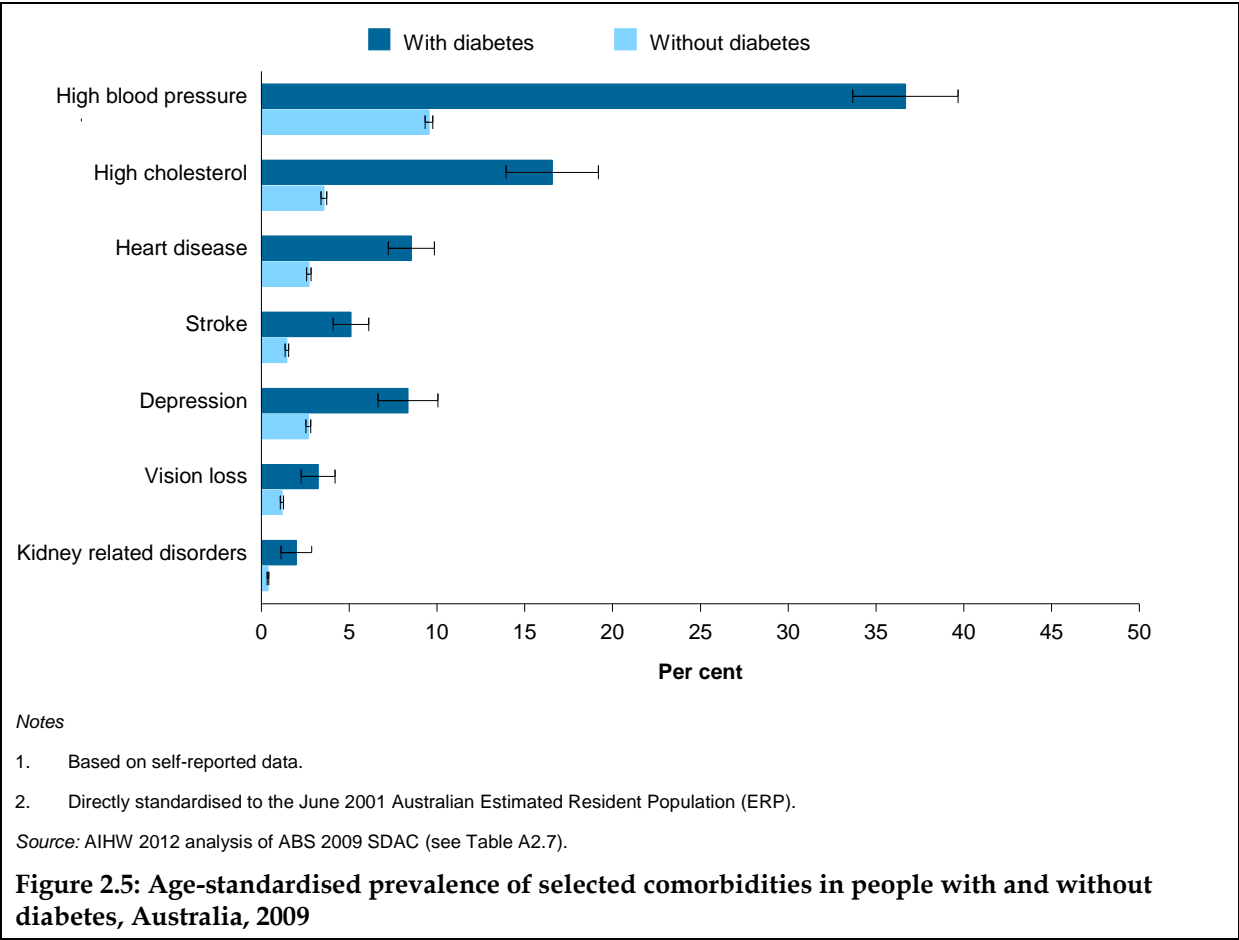
Heart disease and stroke

In 2009, 15.7% of Australians with diabetes reported they had heart disease, compared with 2.7% of people without diabetes (Table A2.6). Heart disease was more common among males with diabetes than females with diabetes (Table A2.5). In the same sample, 9.5% of people with diabetes reported having had a stroke while the corresponding rate for people without diabetes was 1.5%. The age-standardised rate of heart disease and stroke in people with diabetes was significantly higher than in people without diabetes (Figure 2.5).

Other comorbidities

Other conditions common in people with diabetes included depression (6.8%), vision loss (5.5%) and kidney-related disorders (2.4%) (Table A2.5). By comparison, the prevalence of depression, vision loss and kidney-related disorders among people without diabetes was 2.7%, 1.2% and 0.4%, respectively (Table A2.6). The differences in prevalence of these conditions between those with and without diabetes remained after taking age into account (Figure 2.5).

It should be noted that the presence of co-existing conditions associated with diabetes does not necessarily mean they were caused by diabetes, or vice versa.



3 How common are impairments, limitations or restrictions in people with diabetes?

Key points

- People with diabetes have a higher prevalence of disability than people without diabetes (age-standardised rates of 39% compared with 17%) and are more likely to have a severe or profound limitation, compared with people without diabetes (age-standardised rates of 14% compared with 5%).
- Disabilities are more prevalent in people with lower education levels (among people with diabetes, age-standardised rates of 59% for those who completed Year 10 or less, 39% for those who completed Year 11 or Year 12, 39% for those who completed a certificate or diploma and 31% for those who completed a bachelor degree or above). The relationship between disability and education level is complex and cannot be explained using the available data.
- The most common type of disability experienced by people with diabetes was restriction in physical activities or work (32% of people with diabetes).
- Among all people with loss of sight, 17% reported having diabetes.

This chapter looks at whether people with diabetes are more likely to have a disability than those without diabetes, whether or not the disability was diabetes-related. Disability refers to any self-reported impairment, activity limitation or participation restriction defined by the 2009 SDAC (Box 1.4). This chapter also examines the prevalence of diabetes among people with specific impairments, limitations or restrictions.

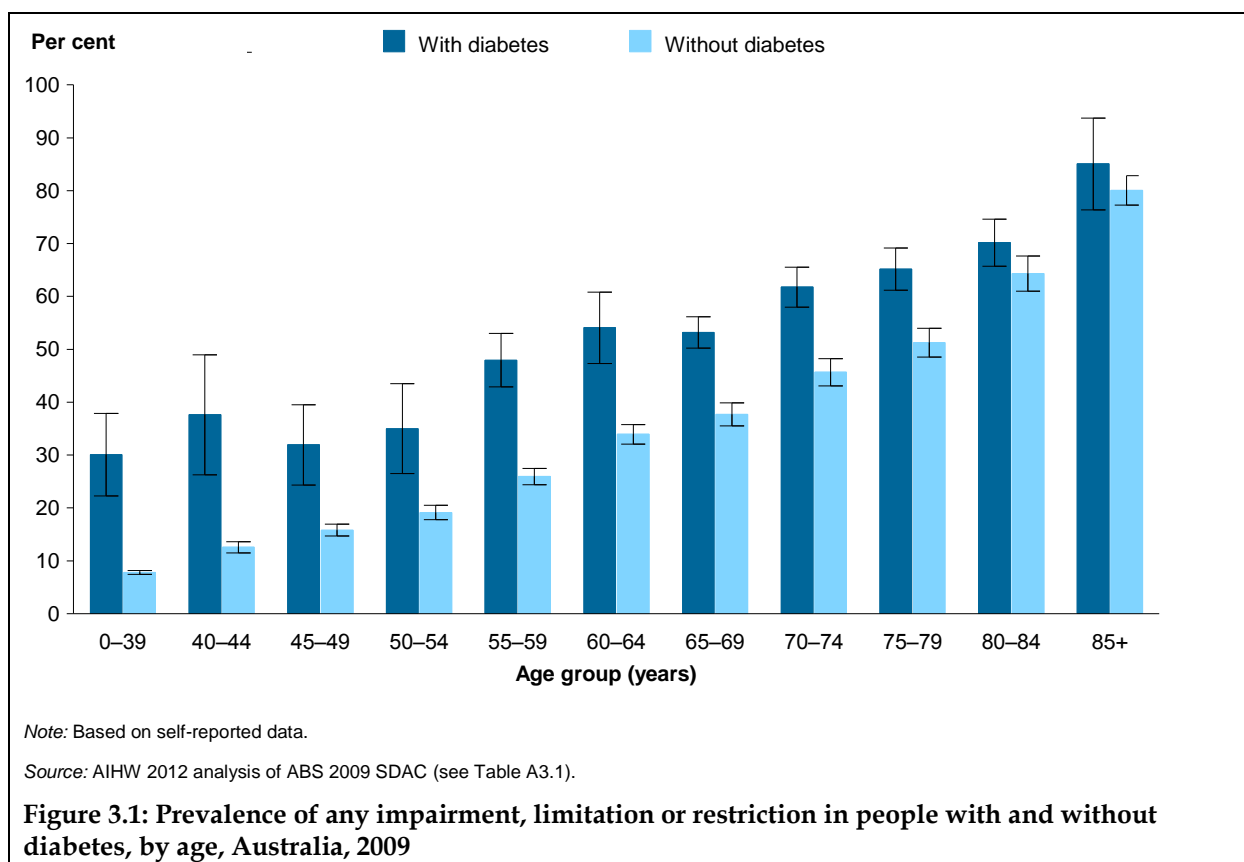
‘Blackouts, fits and loss of consciousness’ is one category this chapter explores. These can occur as a side effect of certain diabetes medicines and therefore may not be considered a direct disability of diabetes. However, many people with diabetes worry and fear blackouts due to hypoglycaemia, and find they impair, limit and restrict their lives. People with diabetes may also experience blackouts due to a health condition, unrelated to diabetes. This chapter, however, does not set out to describe diabetes-related disabilities alone. In order to present a complete snapshot of all limitations or restrictions reported by people with diabetes, ‘blackouts, fits and loss of consciousness’ are included in the analyses.

The information presented should be interpreted as the co-existence of diabetes and disability. The 2009 SDAC is a cross-sectional survey taken at a point in time and therefore it is not possible to know whether diabetes led to a disability or whether having a disability led to diabetes. Chapter 4 focuses on people who reported that diabetes was the cause of their disability.

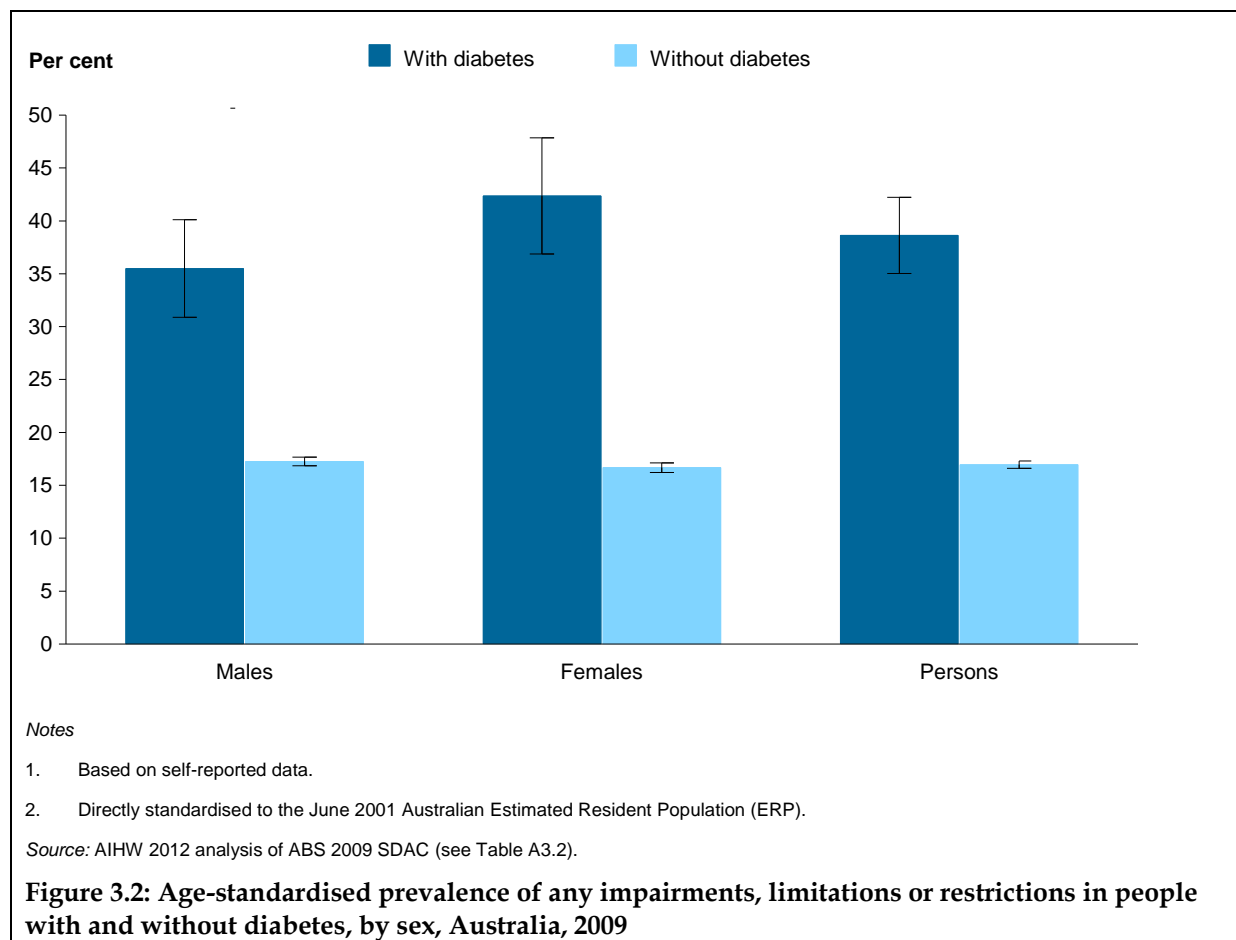
Prevalence of any impairment, limitation or restriction

People with diabetes have a significantly higher prevalence of impairments, limitations or restrictions (53.4%) than people without diabetes (17.2%) (Table A3.1). The overall disability rate for females and males with diabetes was 56.4% and 50.8%, respectively.

The prevalence of disabilities in those with diabetes increased with age, from 30.1% of people aged 0–39 to 85.1% in people aged 85 and over. In people without diabetes, the prevalence of disability also increased with age, but the prevalence was significantly lower than in those with diabetes for all but the oldest age groups (Figure 3.1). Among the 441,640 people with diabetes and a disability, 2.0% (8,989) reported that diabetes was their only health condition with most of these people in the 0–39 age group. Within this 0–39 age group, 28.7% reported that diabetes was their only health condition.

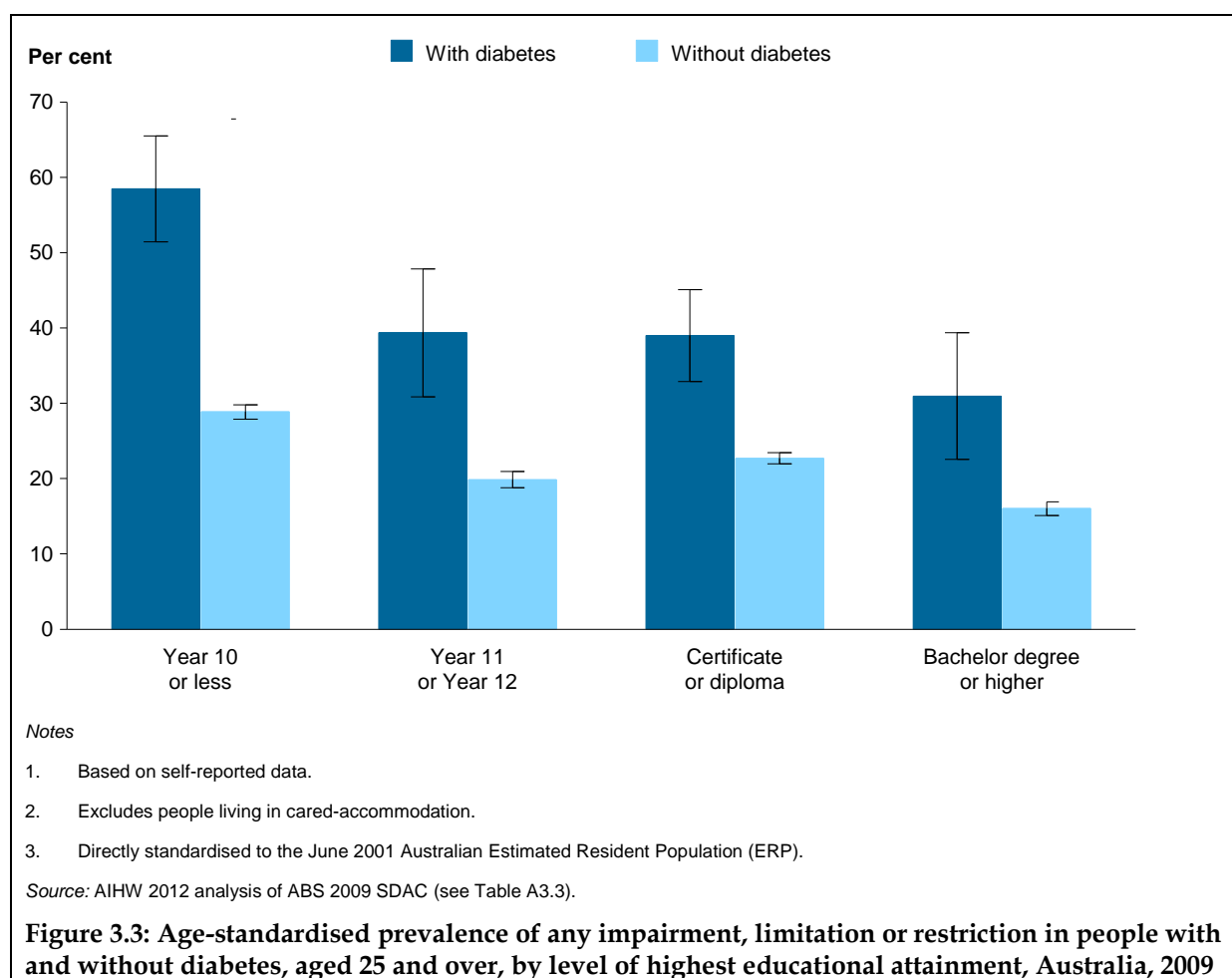


After adjusting for differences in the age structure in the two populations, the prevalence of disability in those with diabetes was still significantly higher than in people without diabetes (Figure 3.2). Males with diabetes were twice as likely to have a disability as males without diabetes (age-standardised rates of 35.5%, compared with 17.2%), while for females with diabetes the presence of disability was 2.5 times as likely as in females without diabetes (age-standardised rates of 42.4%, compared with 16.7%).



Disability prevalence by educational attainment

Among people with and without diabetes, disabilities were most common in those who completed Year 10 or below and least common in those who completed a bachelor degree or above (Table A3.3). After adjusting for age, a clear difference in disability prevalence was observed between people with diabetes who completed Year 10 or less and those who completed higher education (Figure 3.3). The same difference was true among people without diabetes. This suggests that, although people with diabetes are more likely to have a disability, the relationship between disability and education is multi-faceted. Many of these factors may interact. The data included in this analysis are not sufficient to examine these complex relationships.

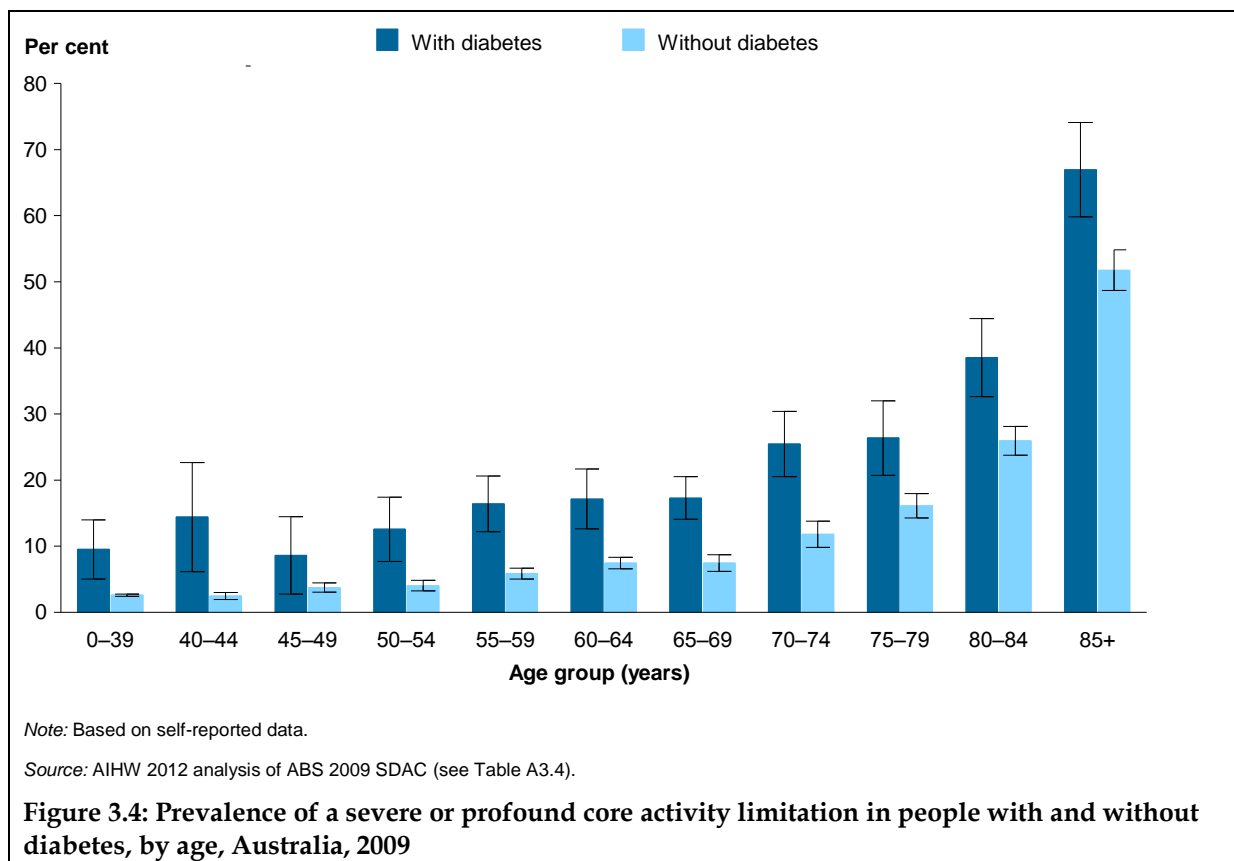


Prevalence of severe or profound limitation

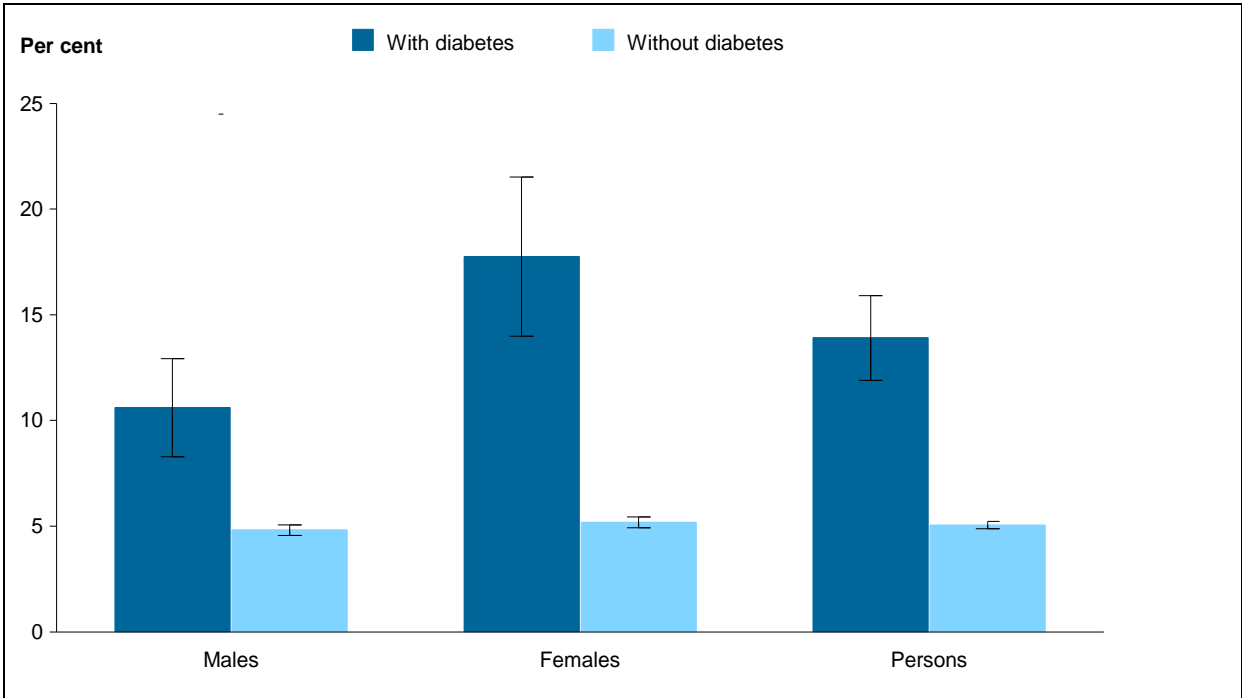
The 2009 SDAC defines 4 levels of core activity limitations (mild, moderate, severe and profound). These classifications are based on a person's report of overall level of limitation in the core activities of communication, mobility and self-care (Box 1.5). People with severe or profound core activity limitations represent disability at the higher end of the scale.

The prevalence of severe or profound core activity limitations was 22.1% among those with diabetes and 5.2% in people without diabetes (Table A3.4). Females with diabetes were more likely to have severe or profound limitations than males. Overall, 26.7% of females with diabetes reported they had a severe or profound limitation, compared with 18.0% of males.

The prevalence of severe or profound core activity limitations increased with age in both those with and without diabetes (Figure 3.4). The rate of increase was most marked in the older age groups. This pattern may be due to both diabetes and disability increasing with age.



After adjusting for differences in age, the prevalence of severe or profound core activity limitations in people with diabetes was still almost 3 times as high as in people without diabetes (age-standardised rates of 13.9%, compared with 5.0%; Figure 3.5). The prevalence of severe or profound limitation was highest in females with diabetes. The age-standardised rate for females with diabetes was 17.8%, compared with 10.6% for males with diabetes (Table A3.5). This information should be interpreted as the co-existence of diabetes and severe or profound limitation. It is not known whether diabetes led to the core activity limitation or vice versa.



Notes

1. Based on self-reported data.
2. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Source: AIHW 2012 analysis of ABS 2009 SDAC (see Table A3.5).

Figure 3.5: Age-standardised prevalence of a severe or profound core activity limitation in people with and without diabetes, by sex, Australia, 2009

Prevalence of specific impairments, limitations or restrictions

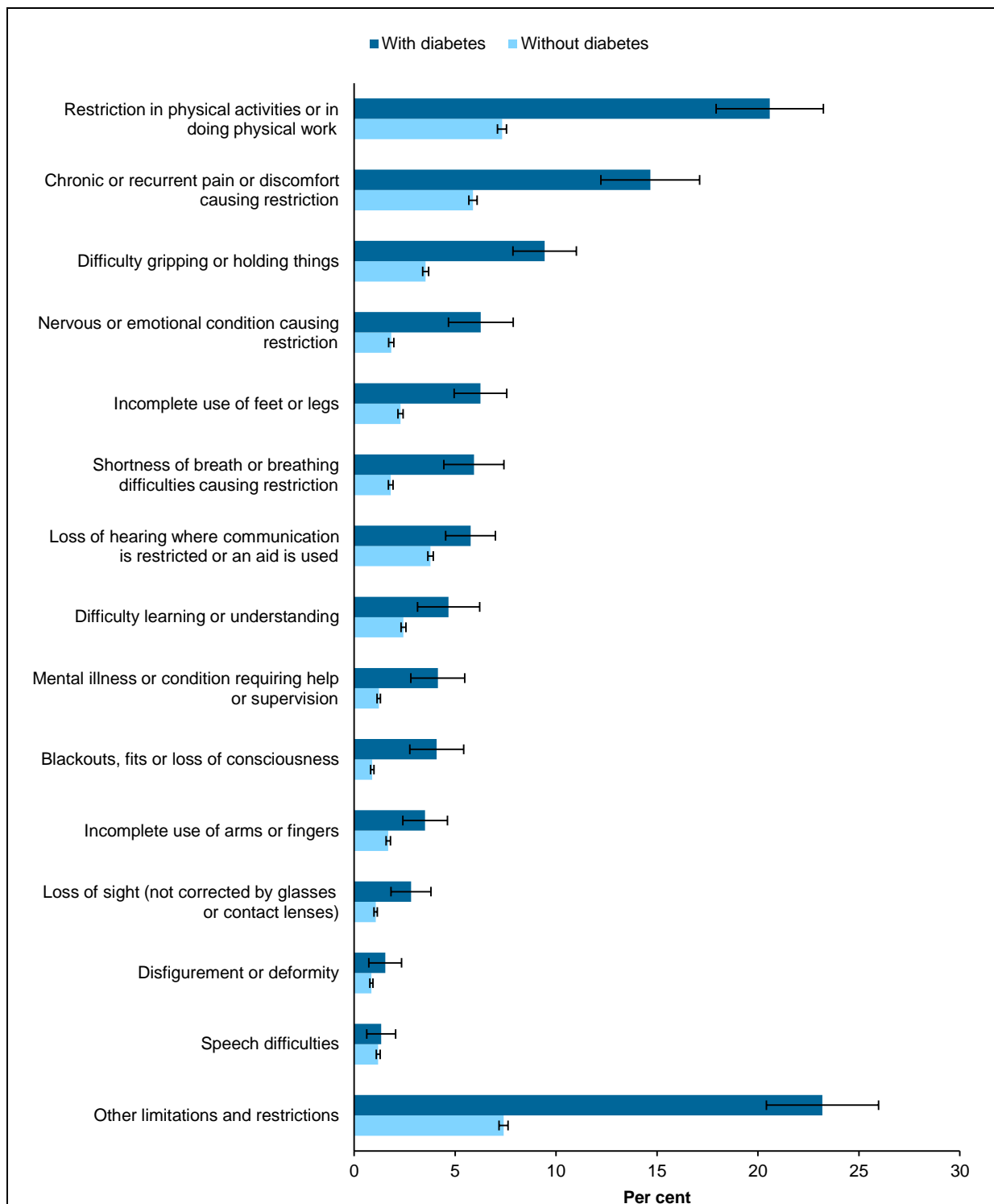
This section looks at the specific types of disabilities reported by people with diabetes, compared with those without. The prevalence count includes, but is not limited to, disabilities caused by diabetes. Chapter 4 focuses on people who reported that diabetes was the cause of their disability.

People with diabetes had significantly higher prevalence rates for every type of disability recorded than people without diabetes (Table A3.6). Restrictions in doing everyday physical activities or work were among the most common type of disability reported by people with diabetes, followed by chronic or recurring pain or discomfort. They were also significantly more likely to have loss of sight, incomplete use of feet or legs and to have difficulty gripping or holding things.

Disabilities are more prevalent in older age groups and, of those surveyed, people with diabetes were on average older than those without diabetes. In order to account for this bias, the age-standardised prevalence rates are presented in Table A3.7 and Figure 3.6. After adjusting for age, people with diabetes still reported significantly higher prevalence rates than people without diabetes for all the disability types except speech difficulties and disfigurement or deformity (Figure 3.6). People with diabetes were still twice as likely to live with loss of sight, chronic pain, incomplete feet or legs or have difficulty gripping or holding things, as people without diabetes.

People with diabetes and any disability reported experiencing restrictions in physical activities and doing physical work, and chronic or recurrent pain or discomfort causing restrictions as their principal health condition (the condition causing them the most problems) (Table A3.8). This was the same among people with diabetes and a disability in age groups under 60 (younger age group) and 60 and over (older age group) (Table A3.8).

The younger age group (people aged under 60) was more likely to report a nervous or emotional condition causing restriction than the older age group (18.3%, compared with 7.4%), and 'blackouts, fits or loss of consciousness' (11.9% in people aged under 60 and 4.5% in people aged 60 and over). By contrast, a greater proportion of people aged 60 and over reported loss of hearing (33.7%, compared with 11.4%) and incomplete use of feet or legs (24.0%, compared with 13.8%) than people with diabetes and any disability aged under 60.



Notes

1. Based on self-reported data.
2. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Source: AIHW 2012 analysis of ABS 2009 SDAC (see Table A3.7).

Figure 3.6: Age-standardised prevalence of specific impairments, limitations or restrictions in people with and without diabetes, by type of impairment, limitation or restriction, Australia, 2009

Prevalence of diabetes among people with specific impairments, limitations or restrictions

This section looks at what proportion of people with each specific type of disability also reported they had diabetes. This does not mean diabetes was the cause of the disability.

In 2009, 18.3% of people with shortness of breath or breathing difficulties causing restriction reported they had diabetes (Table 3.1). By comparison, 10.1% of people with diabetes reported experiencing breathing difficulties (Table A3.6). One in 6 people with loss of sight (16.6%) reported they had diabetes, which is 5.4% of all people with diabetes. A possible explanation of these differences is that, although loss of sight affects a small proportion of people with diabetes, they make up a significant proportion of people with vision impairments.

Among all people who reported incomplete use of feet or legs, 16.4% reported that they had diabetes. Among all people with diabetes, 11.4% reported incomplete use of feet or legs. The implication is that diabetes may be more common among people with certain disabilities than people with diabetes having that disability.

In contrast, restrictions in physical activities or doing physical work were more common among people with diabetes than people with physical activity restrictions who had diabetes. Among all people who reported restriction in physical activities, 14.8% said they had diabetes. Of people with diabetes, 32.1% said they were restricted in physical activities or doing physical work. In this case, although restrictions in physical activities are a significant burden on people with diabetes, there are far more people without diabetes who experience this disability.

Table 3.1: Prevalence of diabetes among people with specific impairments, limitations or restrictions, by sex and type of impairment, limitation or restriction, Australia, 2009

Type of impairment, limitation or restriction	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Shortness of breath or breathing difficulties causing restriction	44,873	20.8	17.3–24.4	39,021	16.1	13.6–18.5	83,894	18.3	16.3–20.3
Loss of sight (not corrected by glasses or contact lenses)	23,016	19.6	14.4–24.8	21,549	14.2	11.1–17.4	44,565	16.6	13.9–19.3
Incomplete use of feet or legs	46,950	18.2	16.2–20.3	47,583	15.0	12.8–17.1	94,534	16.4	15.1–17.8
Restriction in physical activities or in doing physical work	134,489	16.4	15.0–17.8	130,757	13.5	12.2–14.7	265,246	14.8	13.9–15.7
Difficulty gripping or holding things	54,654	17.4	15.2–19.6	71,110	12.9	11.3–14.6	125,764	14.6	13.4–15.7
Loss of hearing where communication is restricted or an aid is used	76,376	14.2	12.4–16.1	47,427	12.6	10.6–14.6	123,803	13.6	12.4–14.8
Incomplete use of arms or fingers	26,197	14.5	11.6–17.3	27,836	12.3	10.0–14.6	54,033	13.3	11.6–15.0
Blackouts, fits or loss of consciousness	14,683	14.7	10.0–19.4	13,555	12.0	8.6–15.4	28,238	13.3	10.4–16.2
Chronic or recurrent pain or discomfort causing restriction	80,727	13.4	12.0–14.8	98,763	12.3	10.8–13.9	179,490	12.8	11.8–13.8
Mental illness or condition requiring help or supervision	15,480	10.8	7.8–13.8	19,801	13.5	11.2–15.8	35,281	12.2	10.4–13.9
Nervous or emotional condition causing restriction	20,882	10.9	8.5–13.4	24,024	10.2	8.3–12.1	44,906	10.5	9.1–11.9
Disfigurement or deformity	8,771	9.7	6.3–13.2	7,220	7.1	4.7–9.4	15,991	8.3	6.4–10.2
Difficulty learning or understanding	22,470	7.3	5.7–8.9	19,359	8.3	6.8–9.7	41,829	7.7	6.7–8.7
Speech difficulties	9,571	6.1	4.2–8.1	7,847	7.4	5.4–9.4	17,418	6.6	5.4–7.9
Other limitations and restrictions	128,114	16.2	14.4–18.0	121,185	12.2	11.1–13.3	249,298	14.0	12.9–15.0

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

4 How many people have an impairment, limitation or restriction caused by diabetes?

Key points

- Eleven per cent of people with diabetes (almost 90,000 Australians) reported they had a disability (an impairment, limitation or restriction) caused by diabetes.
- Fifty-nine per cent of those with a disability caused by diabetes were receiving treatment or medication, but were still restricted in everyday activities by their diabetes.

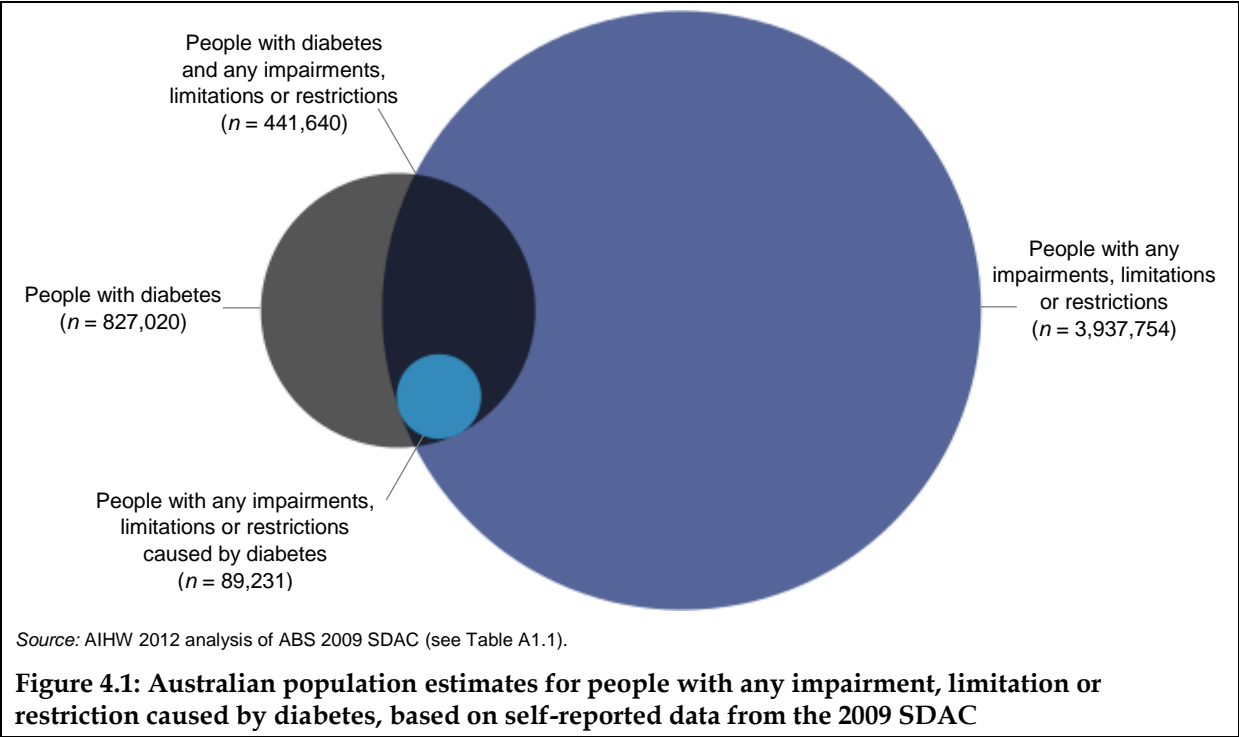
This chapter focuses on people who reported that diabetes was the cause of their disability. This is the only chapter in this report that examines disabilities caused by diabetes.

Diabetes is an independent risk factor for a number of disabilities and it may be difficult for people with diabetes to know if their disability was caused by diabetes. This is complicated further by the onset of disability caused by diabetes many years after the diagnosis. As such, the estimates presented in this chapter may be less reliable than those in the rest of the report.

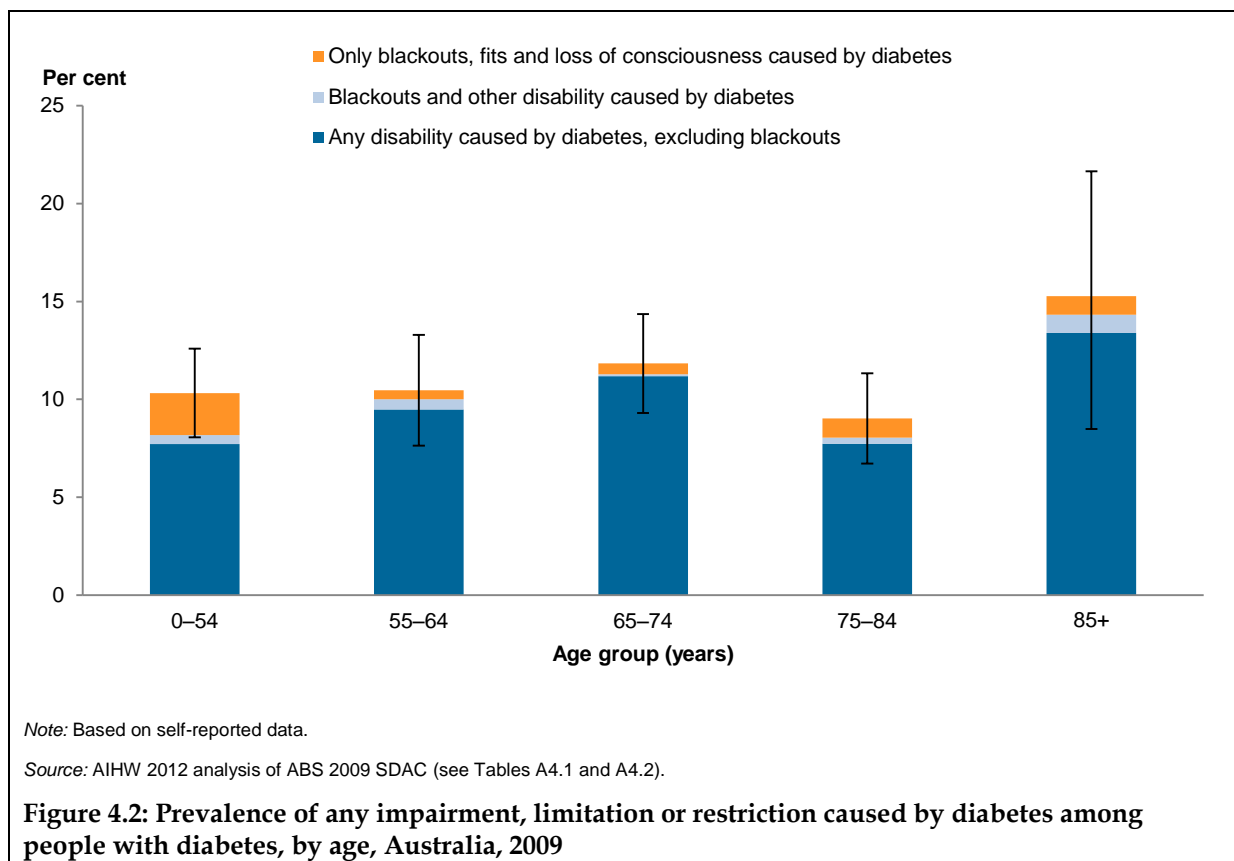
People with diabetes may experience blackouts due to hypoglycaemia, which can occur as a side effect from diabetes medications. Therefore, 'blackouts, fits and loss of consciousness' are related to the management of diabetes, rather than being a complication of the disease. However, people with hypoglycaemia may report that their blackouts were caused by their diabetes. In order to tackle this issue, people who report that 'blackouts, fits or loss of consciousness' were caused by diabetes are distinguished from people with other disabilities caused by diabetes. This distinction in the analyses should not devalue the impact of this disability among people with diabetes.

Prevalence of any impairment, limitation or restriction caused by diabetes

In 2009, there were an estimated 827,020 people with diabetes and just over half of them also reported they had a disability. People with a disability were asked to identify the health condition that caused their disability. Based on self-reported data, an estimated 89,231 Australians had a disability caused by diabetes (Figure 4.1). Determining the cause of a disability can be difficult in a self-reported survey. People’s perceptions and understanding of the potential impact of their health conditions could influence their opinion about what caused their disability. Therefore analyses of people with a disability caused by diabetes have been limited to this chapter and should be interpreted with caution.



Among people with diabetes, 10.8% reported they had a disability caused by diabetes (Table A4.1). This was similar for males and females (10.7%, compared with 10.9%). There was no significant difference in the prevalence of disability caused by diabetes for different age groups (Figure 4.2).



Based on self-reports, an estimated 11,378 people experienced ‘blackouts, fits and loss of consciousness’ due to their diabetes and, for most of them (an estimated 8,332 people), it was their only disability caused by diabetes. Figure 4.2 shows the age distribution of this population as a subset of all people who reported having a disability caused by diabetes. Among people aged under 55 with a disability caused by diabetes, one-quarter (25.3%) reported that diabetes was the cause of their blackouts (Table A4.2).

Prevalence of specific impairments, limitations or restrictions caused by diabetes

Section 3.2 presented all impairments, limitations and restrictions in people with diabetes. By comparison, the focus of this section is on the type of disabilities reported as being caused by diabetes. People may attribute more than one disability to diabetes and therefore may be counted multiple times in the following analyses.

People with diabetes are at an increased risk of developing eye disease, particularly diabetic retinopathy, cataract and glaucoma, which can lead to loss of sight. From the 2009 SDAC, loss of sight that was not corrected by glasses or contact lenses was caused by diabetes in an estimated 9,717 people (Table A4.3). This is 10.9% of people with any impairment, limitation or restriction caused by diabetes.

Of those who said diabetes was the cause of their disability, 59.4% said they were being restricted in everyday activities by their diabetes even though they were receiving treatment, and 11.8% reported their diabetes caused restrictions in physical activities or doing physical work. Diabetes is associated with nerve damage and poor circulation in the lower limbs: 6.2% of people with a disability caused by diabetes reported they had incomplete use of their feet or legs as a result of their diabetes.

In addition, 12.8% of people with a disability caused by diabetes reported having 'blackouts, fits or loss of consciousness' due to their diabetes. Among other causes, these can occur as a result of taking too much diabetes medicines (Table A4.3).

Other impairments, limitations and restrictions reported to be caused by diabetes were chronic or recurring pain or discomfort, difficulty gripping or holding things, breathing difficulties, loss of hearing, mental illness, incomplete use of arms or fingers, learning or understanding difficulties, disfigurement or deformity, and 'other' types of restriction.

5 What proportion of people with diabetes have restrictions in participation and receive assistance?

Key points

- Forty per cent (age-standardised rate) of working-age people with diabetes and a disability (impairment, limitation or restriction) said they were permanently unable to work, compared with 20% (age-standardised rate) of people with a disability who did not have diabetes.
- Sixty-two per cent (age-standardised rate) of people with diabetes and a disability received some form of assistance, compared with 51% (age-standardised rate) of people with a disability but without diabetes.
- Eighty-two per cent of primary carers of people with diabetes and a disability helped out with mobility tasks.

This chapter focuses on people who report having diabetes and a disability (any impairment, limitation or restriction) and the effect on participation restrictions and assistance received. Participation restrictions include problems with going to school or to work, and problems participating in community activities.

The analyses presented in this chapter are limited to the household component of the 2009 SDAC. For people in cared-accommodation (such as hospitals, nursing homes, aged-care hostel, cared components of retirement villages and homes such as children's homes) a short form of the survey was completed that did not include questions about participation restrictions, assistance received or impact on carers.

Participation restrictions

People may find it difficult to attend school, work or social engagements because of their health condition or disability. This section looks at the level of participation in these activities among people with a disability in people with and without diabetes.

In addition to medical management, living with diabetes requires attention to the behavioural, psychological and social aspects of the condition. Better understanding of behaviours, as well as how diabetes impacts on quality of life, is needed to inform future service provision so that people with diabetes receive optimal care and support (Speight et al. 2011).

Diabetes may affect the daily lives of not only those who have the disease, but also their friends and family. It affects the lifestyle of people with diabetes, what they can eat and drink, and other everyday activities. They may need to ensure that either they have quick access to food or they carry food with them at all times. There may be difficulties in obtaining a driver's licence, as well as getting some jobs. There may also be psychological impacts from being diagnosed with diabetes and from changes to daily life. Friends and family may need to adjust to the changes as well, which may affect their own lives and relationships.

There is also the impact and burden of the complications of diabetes. Losing partial or total sight, or losing a limb due to amputation, may affect a person's ability to participate in social activities and their independence in performing daily activities such as self-care, mobility and communication.

Complications not only have a direct physical impact, they can also have psychological impacts, and affect the social life and wellbeing of a person. The struggle of learning to cope with the changes may also cause stress. The complication may be severe enough to cause the loss of ability to work, which has its own consequences.

Participation in education

Having a disability can make going to school quite challenging. Physical and sensory disabilities may have an impact on children's ability to interact with others, and intellectual disabilities can make it difficult for them to learn. Having a chronic health condition such as diabetes can also affect children's ability to participate in schooling, because they may have related health complications or need regular medical attention.

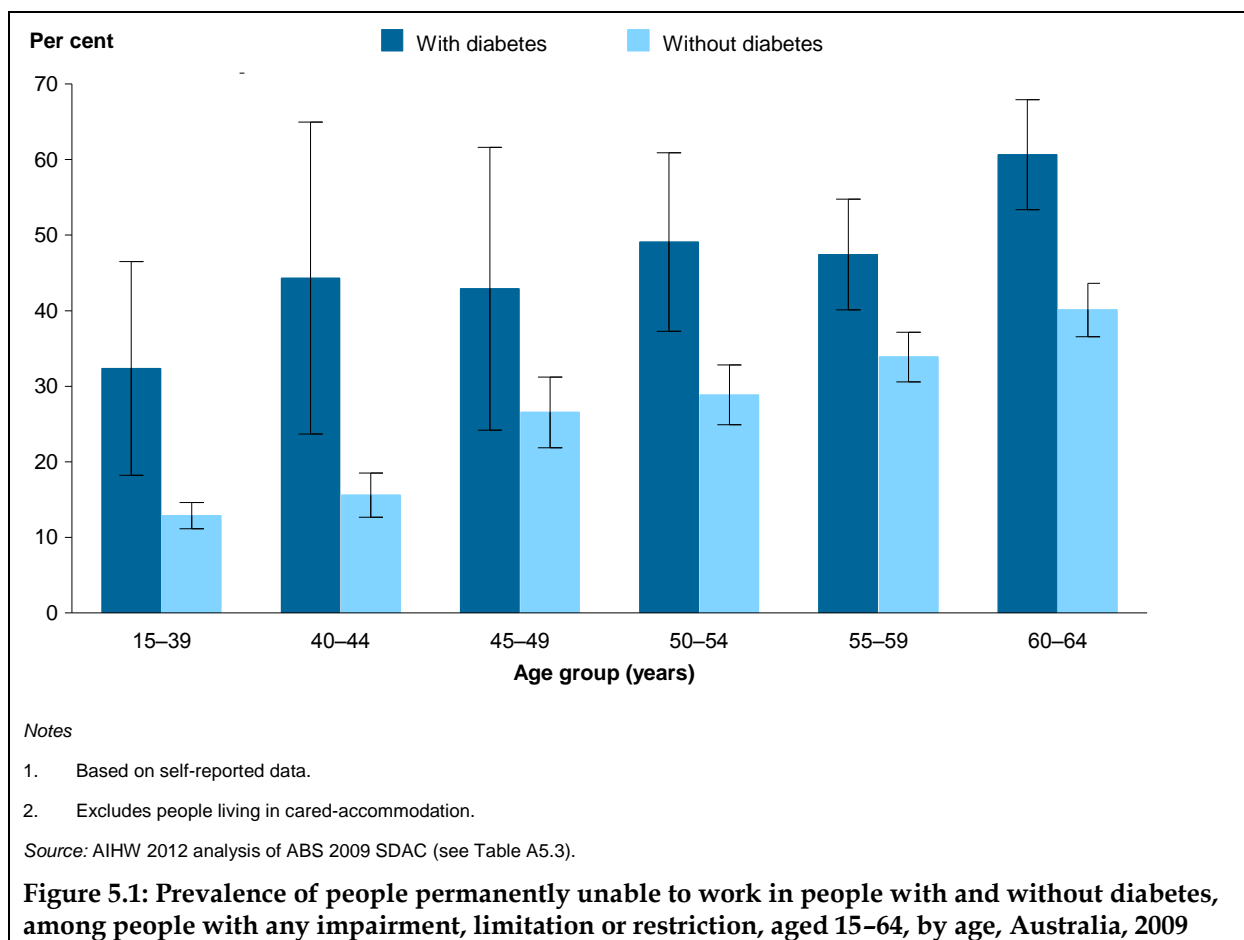
Type 1 diabetes often develops during childhood and adolescence, although it can occur at any age (Box 1.3). Based on registration on the National Diabetes Services Scheme in 2010, there were an estimated 3,400 people aged 0–11, and 6,900 people aged 12–18, with Type 1 diabetes in Australia (AIHW 2012b). Once diagnosed, a person will require insulin treatment every day throughout their life. Because of this requirement to regularly administer insulin, children with Type 1 diabetes may experience greater schooling restrictions than children without diabetes (Sinnamon et al. 2012).

Based on self-reports from the 2009 SDAC, 19.1% (2,380) of children and teenagers with diabetes had a disability. With such a small sample, it was not possible to assess the level of schooling restriction experienced by young people with diabetes and a disability.

Participation in employment

Employment participation differed markedly for people with a disability, depending on whether they reported they had diabetes or not. At the time of the survey, 50.1% of the working-age population (aged 15–64) with diabetes and a disability were permanently unable to work (Table A5.1). The rate for males was 46.9% and for females 53.3%. By comparison, 25.1% of people with a disability who did not have diabetes reported that they could not work (Table A5.2).

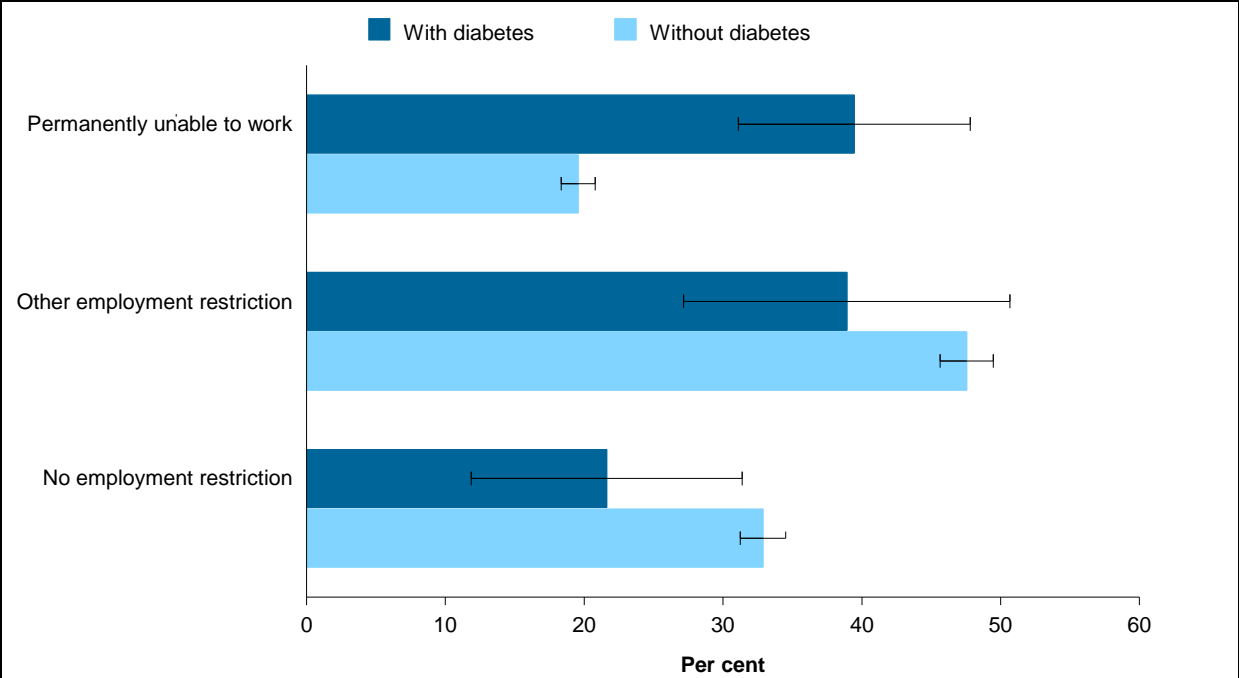
Figure 5.1 shows the age distribution of working-aged people with a disability who reported that they were permanently unable to work. In every age group, people with diabetes were more likely to report that they were permanently unable to work. The difference was significant for all but the 45–49 age group. However, the younger age groups in the diabetes population were based on smaller samples and therefore caution is warranted in the interpretation of these results.



After adjusting for differences in the age structure of the two populations, people with diabetes and a disability were still twice as likely to be permanently unable to work as other people with a disability (age-standardised rates of 39.5%, compared with 19.6%; Figure 5.2). This does not mean diabetes was the cause of the employment restrictions, or vice versa. The capacity of people with a disability to participate in paid work is influenced by multiple factors. The findings presented in this section demonstrate that diabetes and its complications are potential causes of employment restrictions. In addition, a substantial

proportion (14.5%) of working-age people with a disability who were permanently unable to work also had diabetes.

An estimated 42,169 (25.5%) people with diabetes and a disability were employed in either full-time or part-time work. Of these employed people 20.3% needed at least 1 day off work per week on average, compared with 14.5% of people with a disability who did not have diabetes. However, the amount of leave taken from work by people with and without diabetes was not significantly different (Table A5.5).



- Notes
1. Based on self-reported data.
 2. Excludes people living in cared-accommodation.
 3. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Source: AIHW 2012 analysis of ABS 2009 SDAC (see Table A5.4).

Figure 5.2: Age-standardised prevalence of employment restrictions in people with and without diabetes, among people with any impairment, limitation or restriction, aged 15–64, Australia, 2009

Participation in community and social activities

Another important component of participation is involvement in community and social activities. Of people with diabetes and a disability, 9.6% did not participate in any social or community activities away from home and 1.7% did not leave home at all in the preceding 3 months, but this was not significantly different from the experience of people with a disability without diabetes (7.7% and 0.9%, respectively; Table A5.6).

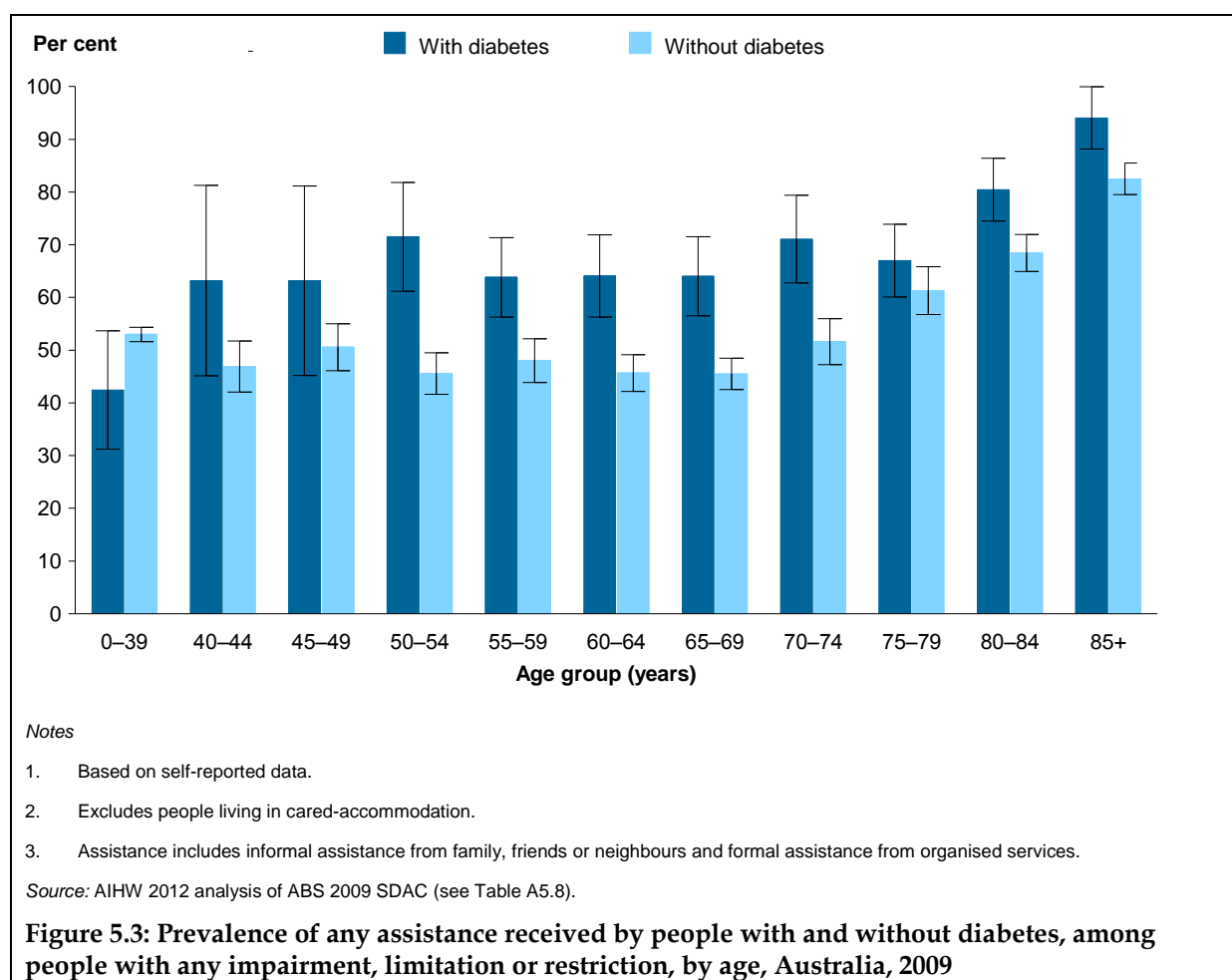
Assistance received

People with a disability may receive formal or informal assistance with everyday activities, such as housework and gardening, or with core activities of daily living, such as mobility, communication and self-care. The level of assistance they receive depends on the nature and severity of their disability. This section looks at the proportion of people with diabetes and a disability who receive assistance and the type of activities for which they receive assistance.

Formal assistance is provided by organisations or individuals on a regular, paid basis. This may include services from government, private and not-for-profit sectors, such as nurses, home-care workers and voluntary workers. Informal assistance is help or supervision provided to people by family, friends or neighbours. The frequency of care provided can range from multiple times a day to as little as once a year. Some form of assistance was received by 68.4% of people with both diabetes and a disability living in the community (76.6% of females and 60.8% of males) (Table A5.7).

A greater proportion of people with diabetes and a disability (68.4%) received some form of assistance than people with a disability but without diabetes (53.2%) (Table A5.8). Figure 5.3 shows that people with diabetes and a disability received more assistance than other people with a disability across all but the youngest age group (0–39 age group). In the youngest age group, people without diabetes received more assistance, but the difference was not significant. After adjusting for age, among all people with a disability living in the community, people with diabetes were still more likely to have received all forms of assistance (Figure 5.4).

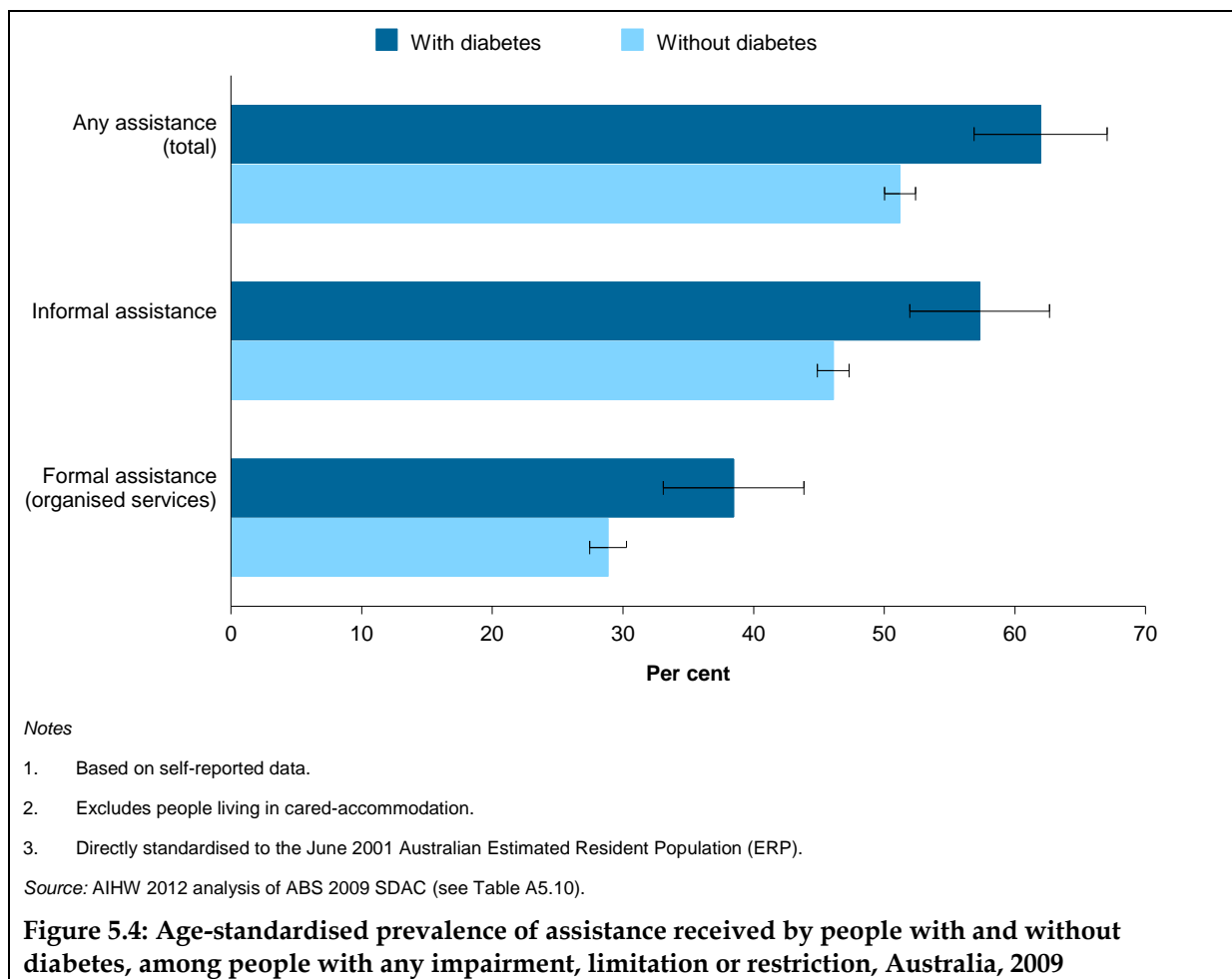
Among the 285,837 people with diabetes and a disability who received any assistance, 1.5% (4,245) reported that diabetes was their only health condition and most were aged under 40. Within this 0–39 age group, 33.1% reported that diabetes was their only health condition. Comparing the burden of disability among those who do and do not have diabetes provides a useful insight into the impact of diabetes on physical, social and emotional functioning, and the attendant effect on assistance received.



Type of assistance received

Most of the assistance received by people with diabetes and a disability was informal assistance from family, friends or neighbours (59.5% of all people with diabetes and a disability or 87.0% of those currently receiving assistance) (Table A5.9). Sixty-six per cent of those with diabetes and a disability currently receiving assistance received formal assistance from organised services (44.9% of all people with diabetes and disability). Among people with a disability but without diabetes, 46.3% received informal assistance and 31.0% received assistance from organised services.

After adjusting for age, among all people with a disability living in the community, people with diabetes were still more likely to have received all forms of assistance (age-standardised rates of 62.0% in people with diabetes, compared with 51.2% in people without diabetes; Figure 5.4). This implies that having diabetes may lead to a greater requirement for carers and assistance providers than not having diabetes.



Frequency of assistance received

Informal assistance received

Some people receive informal assistance on a regular basis, and this can be a burden on their carers. Of all people with diabetes and a disability currently receiving any form of assistance, 45.9% received informal assistance at least once a day (Table A5.11). Although this may require a major investment in time for carers, of those receiving informal assistance, the frequency of informal assistance received by this population is comparable with that received by those without diabetes.

Assistance received from organised services (formal assistance)

Nineteen per cent of people with diabetes and a disability currently receiving any form of assistance were in receipt of weekly assistance from organised services (Table A5.12). People without diabetes who were currently receiving assistance accessed formal assistance more frequently than people with diabetes, but this difference was not statistically significant. There are many factors affecting people's access to formal assistance, including availability and cost.

Type of care provided by primary carer (informal assistance)

People with diabetes who also have a disability may receive ongoing assistance with everyday activities, including the core activities of daily living. A primary carer is the person who provides most of the informal assistance (see Box 1.5). Among people with diabetes and a disability, 21.5% (94,835 people) had a primary carer.

Primary carers of people with diabetes most commonly assisted with mobility tasks (82.1%) (Table A5.13), compared with 70.6% for primary carers of people without diabetes. The specific activities primary carers assisted with included moving about the house, getting into and out of bed, and going out.

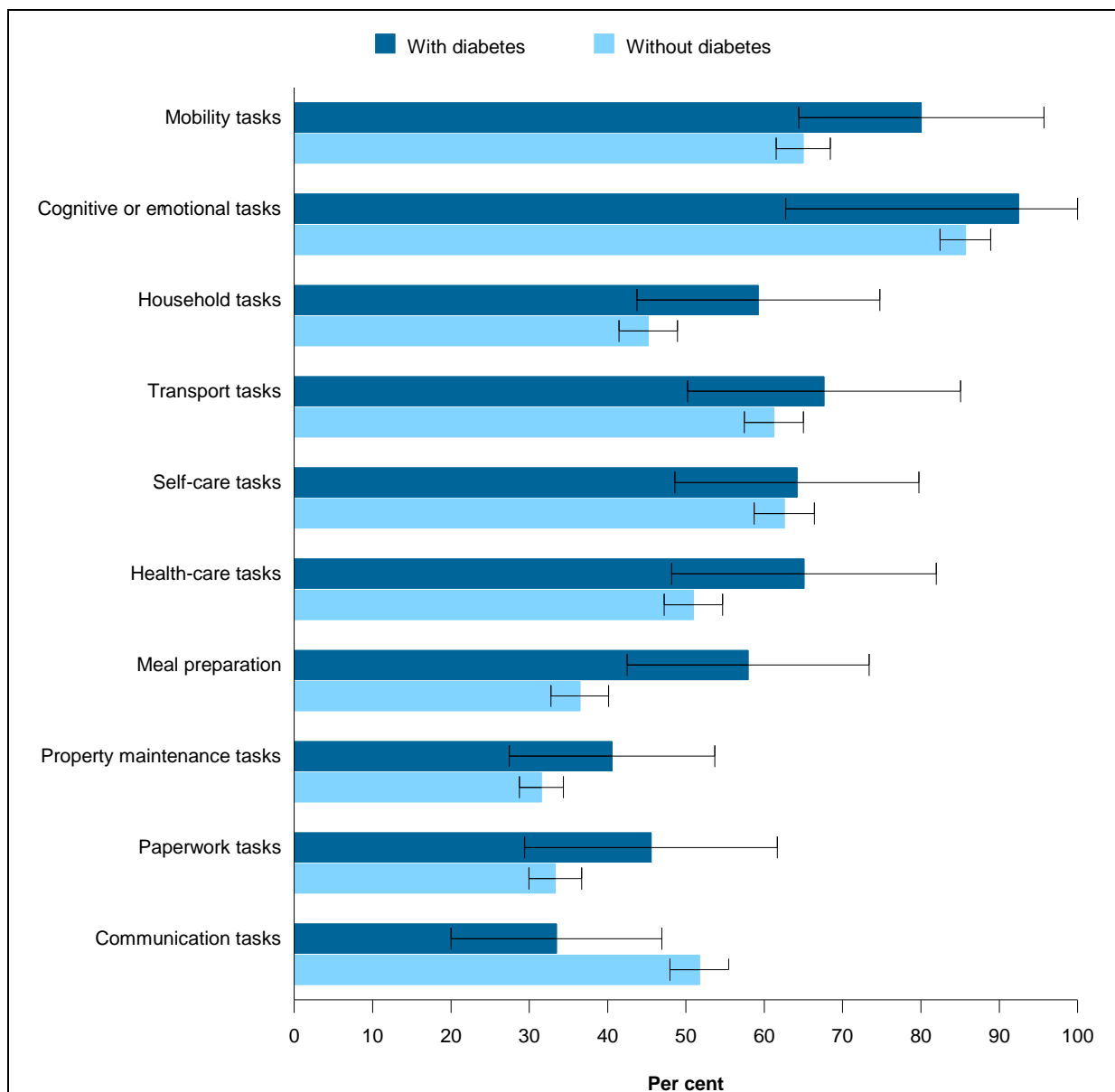
Mobility tasks, together with self-care and communication, constitute the core activities of daily living. Severe or profound limitations are classified by the need for regular help with core activities. Among people with diabetes and a disability who reported they had a primary carer, 68.0% received assistance with self-care and 28.5% with communication. This compares to 62.7% and 44.8% for self-care and communication, respectively among other people with a disability (Table A5.13).

Primary carers provided assistance with health-care tasks to 62.5% of people with diabetes and a disability and with meal preparation to 58.7% of people with diabetes and a disability. Among people with a disability but without diabetes, 52.9% received assistance from a primary carer with health-care tasks and 43.9% with meal preparation.

Cognitive and emotional tasks may describe a broad range of activities, including coping with feelings, problem solving and maintaining relationships. People with a disability may struggle with depression or anxiety related to their condition. Help with cognitive and emotional tasks was comparably high on the list of primary carer assistance received by people with diabetes and a disability (80.4%) and other people with a disability (82.8%).

The biggest difference between the level of assistance provided by primary carers to people with a disability, with and without diabetes, was for housework, including washing, vacuuming and dusting. Almost seventy-five per cent of people with diabetes received assistance with household tasks, compared with 54.0% of those without diabetes. This may be related to the higher amount of assistance received with core mobility tasks among people with diabetes.

Adjusting for the age of people receiving assistance from primary carers removed most of the observed difference between those with and without diabetes (Figure 5.5). This is partially explained by the small sample size among people with diabetes, which resulted in larger confidence intervals around the age-standardised prevalence estimates. The only types of activity that maintained a statistically significant difference between the two groups after adjusting for age were meal preparation and communication tasks. People with diabetes were more likely to receive assistance from primary carers with meal preparation than a person without diabetes, and less likely to receive assistance with communication tasks.



Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.
3. Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).
4. A primary carer is a person aged 15 or over who provides the most informal assistance to a person with one or more disabilities or aged 60 and over. Primary carer in this report refers only to the primary carer whose main recipient is a co-resident.

Source: AIHW 2012 analysis of ABS 2009 SDAC (see Table A5.14).

Figure 5.5: Age-standardised prevalence of assistance received from primary carers by people with and without diabetes, among people with any impairment, limitation or restriction and currently receiving assistance from a primary carer, by type of activity, Australia, 2009

6 Discussion

This report has explored the association between diabetes, its comorbidities and associated impairments, activity limitations and participation restrictions in Australia, based on the 2009 SDAC. Diabetes and its potential multi-system complications can cause considerable functional impairment. The study results provide data on the prevalence and types of impairments, activity limitations and participation restrictions experienced by those with diabetes, and the amount of assistance received. In comparing the burden of disability among those who do and do not have diabetes, this report also provides insight into the impact of diabetes on physical, social and emotional functioning, and the attendant effect on assistance received.

The burden of diabetes

Given the rising global prevalence of diabetes, and the projections that it will continue to increase substantially in the next decades, elucidating the impact diabetes has on disability has important multi-sectoral implications for people with diabetes (Lozano et al. 2012). The increase in the number of people with diabetes is attributable to better case ascertainment, people with diabetes living longer, rising prevalence of obesity leading to a true increase in diabetes incidence and, in developed countries, the population ageing (Lim et al. 2012).

This report estimated, based on self-reports, that, in 2009, 827,020 people in Australia had diabetes and, for 43% of them, diabetes was their principal health condition. Consistent with existing knowledge, this report showed that the prevalence of diabetes increased with increasing age.

In addition, 53% of those with diabetes reported having a disability. People with diabetes were twice as likely to have a disability (age-standardised rates of 39%, compared with 17%) and almost 3 times as likely to have a severe or profound core activity limitation (age-standardised rates of 14%, compared with 5%) as people without diabetes. The prevalence of disability of any form increased with age for those with diabetes (from 30% of those aged 0–39 to 85% of those aged 85 or older). A similar pattern was also observed for those without diabetes.

Impact of diabetes

In the 2009 SDAC, people with a disability were asked to identify the health condition that led to their disability. Among people with diabetes, 11% reported they had a disability that was caused by diabetes. Commonly reported disabilities among the 90,000 Australians with diabetes causing their disability included blackouts, loss of sight, incomplete use of feet or legs and restrictions in physical activities or work. Of those who reported that diabetes was the cause of their disability, 59% said they were being restricted in everyday activities by their diabetes, despite receiving treatment.

Among people with disabilities, some groups may face specific challenges that raise their risk of getting diabetes, especially Type 2 diabetes. These challenges can be related to body functions or may result from social or physical barriers to support and services. There has been little research about the links between diabetes and disability, but, due to the increase

in diabetes, health groups and organisations are starting to pay attention. However, there is still a lot that is not known about the links between different kinds of disability and diabetes.

Population growth and improved longevity are leading to increasing numbers and proportions of older people in many parts of the world, including Australia. As populations age, annual increases in diabetes and disability are expected to rise substantially. The risk of getting diabetes increases rapidly over the age of 45 (IDF 2011), and treatment of diabetes in older people is often complicated by many health issues that develop due to ageing. It is projected that, by the year 2025, the majority of people with diabetes will be aged 65 or older (Shaw & Tanamas 2012). Seniors who have disabilities also carry a higher risk of developing diabetes, and people with certain types of disabilities (for example, people with paralysis) may show the effects of ageing early, increasing the risk of diabetes (Havercamp et al. 2004).

This has important implications: regular and consistent monitoring of the health, functional capacity, care needs and quality of life of people with diabetes is required, with particular attention to older age groups. This is necessary both at an individual level, to optimise health and wellbeing, and at a population level, to facilitate public health planning, community service provision and health and social policy formulation.

Comorbidities found with diabetes

Diabetes may result in a range of complications, including vascular and neuropathic conditions that may lead to physical disability, loss of independence and diminished quality of life.

A large proportion of Australians with diabetes live with comorbidities and complications of the disease. Of those with diabetes, 47% also reported they had high blood pressure and 22% reported having high cholesterol. Compared with people without diabetes, those with diabetes were 3 times as likely to have heart disease (age-standardised rates of 9%, compared with 3%) and almost 4 times as likely to report they had had a stroke (age-standardised rates of 5.1%, compared with 1.4%). They were more than twice as likely to have vision loss as people without diabetes (age-standardised rates of 3.2%, compared with 1.2%) and around 3 times as likely to be depressed (age-standardised rates of 8%, compared with 3%). Males with diabetes were more likely than females with diabetes to report stroke (11%, compared with 8%) and heart disease (18%, compared with 13%), while females with diabetes reported vision loss or depression more often than males with diabetes (6%, compared with 5% and 8% compared with 6%, respectively).

These findings reflect the published literature on this topic. Cardiovascular diseases are the leading complication of diabetes and about half of patients with diabetes die of a cardiovascular cause (van Dieren et al. 2010). Angina, myocardial infarction, stroke, peripheral artery disease and congestive heart failure are all common among people with diabetes.

Diabetes is the leading cause of blindness, kidney failure and lower limb amputations, and these account for much of the burden of diabetes. Diabetes has also become the leading cause of end-stage kidney disease in many countries, accounting for up to 50% of new cases of kidney failure in the US (NDIC 2013). Diabetic retinopathy is the most common cause of blindness among adults under 75 (Williams et al. 2004) and people with diabetes may have more than 25 times greater risk of amputation than those without diabetes (IDF 2011).

Notably, this report has demonstrated that people with diabetes experience a range of disabilities in the form of an impairment, limitation or restriction, some, but not all, of which may be related to their diabetes and its complications. Compared with those without diabetes, people with diabetes had a significantly higher prevalence of every type of disability recorded by the 2009 SDAC. These ranged from physical restrictions, pain, discomfort and deformity to emotional conditions and loss of sight. After taking age into account, people with diabetes still had a higher prevalence rate of all disabilities than people without diabetes (age-standardised rates of 39%, compared with 17%). This highlights the need for a holistic approach to manage diabetes and its complications across Australia.

Personal impact of diabetes

In some countries, including Australia, diabetes prevalence is associated with some markers of socioeconomic status (AIHW 2008). Education is one component of socioeconomic status and has previously been reported to be a strong predictor for diabetes (Geyer et al. 2006). This report demonstrated that the prevalence of diabetes was highest in those with lower education levels. This may reflect the distribution of some behavioural risk factors. For example, the prevalence of physical inactivity, smoking and alcohol consumption, which are risk factors for Type 2 diabetes, has consistently been found to be higher among people with the least education (AIHW 2012a).

Those with lower education levels were also more likely to have a disability, with or without diabetes. It is not possible to identify the reasons for this based on the data used in this study. However, numerous factors may be at play. For example, people from lower socioeconomic backgrounds may have reduced or delayed access to health care and other services (Bywood et al. 2011), contributing to the increased disability.

Social participation can help protect against morbidity and mortality in chronic disease (Holt-Lunstad et al. 2010). The benefits of participation among people with diabetes and a disability are often overlooked. The extent of participation provides another insight into the health experiences of people with diabetes and a disability.

This study found that, among working-age people, 50% of those with diabetes and a disability were permanently unable to work. This is twice as common as for all other people with a disability (age-standardised rates of 40%, compared with 20%). At the time of the survey, 10% of people with diabetes and a disability had not participated in any social or community activity away from home in the preceding 3 months. This has clear social and economic consequences, both at an individual and societal level.

This has also been shown in the literature: Breton et al. (2013) described the risk and magnitude of the burden of people with diabetes on the ability to work, compared with those without diabetes. The study found diabetes reduced an individual's ability to work, increased absenteeism and an individual with diabetes retired earlier, compared with individuals without diabetes. The researchers argued that there is a need to establish diabetes-prevention programs and to develop effective targeted intervention to manage diabetes better. Otherwise, the diabetes burden could worsen as the prevalence of diabetes in the working-age population continues to rise (Breton et al. 2013).

People with diabetes and a disability were more likely to receive assistance than other people with a disability (age-standardised rates of 62%, compared with 51%). Sixty-eight per cent of people with diabetes and a disability received some form of assistance with everyday activities. Among all people with a disability, those with diabetes received more informal

assistance than those without diabetes (age-standardised rates of 57%, compared with 46%) and they were also more likely to receive assistance from organised services (for example, government and non-government organisations; age-standardised rates of 39%, compared with 29%). This suggests that diabetes may add an extra dimension to the care needs of people with a disability.

Future work

This report supports the evidence from clinical studies of an association between diabetes and disability. The 2009 SDAC was inadequate for exploring the nature of this association. The relationship between the two is multi-factorial and extremely complex. The nature of the association, and the factors that are most likely to lead to a person having both diabetes and a disability, could not be fully examined in a self-reported survey. However, this report gives us a better insight into the burden of disability in people with diabetes in Australia.

To extend our understanding, and to obtain accurate estimates of the prevalence of disabilities associated with diabetes, would require a data collection focused on people with diabetes with sufficient sample numbers to compare those with and without disabilities and with appropriate questions on management of diabetes and access to services. A longitudinal survey would assist with assigning diabetes and its complications as the cause of a disability. Improvement of the capture of relevant data in existing collections would better enable the identification of people with diabetes and help in this regard.

Conclusion

The results of this study provide an insight into the prevalence of diabetes and disability in the Australian population, and a possible association between them. In our review of the literature and analysis, we identified a number of issues affecting people with diabetes and a disability. These included the elevated rates of disability among people with diabetes – especially the increased prevalence of severe or profound limitations – and the impact of diabetes and disability on employment participation, showing that over half of people with diabetes and a disability were permanently unable to work. This report has demonstrated a high burden of diabetes and disability in Australia. Those who have both diabetes and a disability of some form experience a disproportionately high burden and require more assistance. Increasing diabetes incidence demands investigation of risk factors and designing modification interventions.

Although it is clear that people who have diabetes face issues and life circumstances that may put them at greater risk of getting disabilities, more research is needed on the link between diabetes and disability. Every person with diabetes should appreciate that the risk of developing a disability is real and that they need to manage their diabetes accordingly. The delivery of services for diabetes prevention and treatment needs to take into account the extent of disability prevalence in the population with diabetes.

Appendix A Additional tables

Table A1.1: Sample sizes and Australian population estimates, based on self-reported data from the 2009 SDAC

Population	Sample size	Estimated population
All people (including people in cared-accommodation)	72,075	21,194,694
People with any impairments, limitation or restriction	20,737	3,937,754
People with diabetes as a current and long-term condition	3,851	827,020
People with diabetes and any impairments, limitation or restriction	2,678	441,640
People with diabetes who said diabetes was their principal health condition	1,274	357,829
People with any impairment, limitation or restriction caused by diabetes	402	89,231
People with diabetes and any impairments, limitation or restriction who received assistance	876	285,837
People with diabetes and any impairments, limitation or restriction who received assistance from a primary carer	290	94,835

Note: ABS removed 1,608 records for the SDAC Basic CURF data set in order to protect and maintain confidentiality.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.1: Prevalence of diabetes as a current and long-term condition, by sex and age, Australia, 2009

Age group (years)	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
0–39	34,466	0.6	0.5–0.7	28,649	0.5	0.4–0.6	63,115	0.6	0.5–0.6
40–44	14,863	2.0	1.3–2.7	10,162	1.4	0.8–1.9	25,025	1.7	1.3–2.1
45–49	22,371	3.0	2.2–3.7	16,531	2.1	1.4–2.8	38,902	2.5	2.0–3.0
50–54	33,189	4.8	3.7–5.9	34,293	4.8	3.8–5.8	67,481	4.8	4.0–5.6
55–59	57,324	9.0	7.7–10.4	42,612	6.6	5.4–7.7	99,936	7.8	6.9–8.7
60–64	57,402	10.0	8.5–11.5	47,098	8.1	6.8–9.5	104,500	9.1	8.1–10.0
65–69	69,678	16.5	14.2–18.7	51,955	12.0	10.0–14.0	121,634	14.2	12.7–15.6
70–74	61,378	18.8	16.4–21.2	45,821	13.1	11.1–15.0	107,199	15.8	14.3–17.4
75–79	44,918	17.7	14.4–21.1	41,325	14.1	11.7–16.5	86,244	15.8	13.6–17.9
80–84	32,435	17.0	14.5–19.4	37,174	15.1	12.5–17.6	69,609	15.9	14.4–17.5
85+	14,335	11.9	8.5–15.3	29,041	11.7	9.7–13.7	43,376	11.8	9.9–13.6
Total	442,360	4.2	4.0–4.4	384,660	3.6	3.4–3.8	827,020	3.9	3.7–4.1

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.2: Prevalence of diabetes among people aged 25 and over, by level of highest educational attainment, Australia, 2009

Level of education	Number	Per cent	95% CI	ASR ^(a)	95% CI
Year 10 or below	365,015	9.3	8.8–9.9	6.2	5.8–6.6
Year 11 or Year 12	91,192	3.8	3.3–4.3	5.0	4.3–5.7
Certificate or diploma	217,410	5.1	4.8–5.4	5.3	4.9–5.7
Bachelor degree or above	97,617	2.9	2.5–3.3	4.1	3.5–4.6
Missing/not stated	13,809	6.4	4.4–8.4	5.1	3.4–6.8

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.3: Prevalence of diabetes where it was also reported as the principal health condition, by sex and age, Australia, 2009

Age group (years)	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
0–39	27,181	78.9	68.3–89.4	21,815	76.1	64.2–88.1	48,996	77.6	71.6–83.7
40–44	10,953	73.7	55.5–91.8	5,553	54.6	40.1–69.2	16,506	66.0	51.3–80.6
45–49	12,853	57.5	41.6–73.3	8,830	53.4	39.6–67.2	21,682	55.7	46.1–65.4
50–54	19,069	57.5	48.4–66.5	17,356	50.6	39.2–62.0	36,425	54.0	47.1–60.8
55–59	30,206	52.7	43.5–61.9	20,451	48.0	39.8–56.2	50,657	50.7	44.4–57.0
60–64	29,842	52.0	47.3–56.7	15,892	33.7	24.0–43.5	45,734	43.8	37.6–49.9
65–69	27,205	39.0	31.0–47.1	18,597	35.8	28.7–42.9	45,803	37.7	31.8–43.5
70–74	23,484	38.3	32.1–44.4	13,634	29.8	21.7–37.8	37,117	34.6	30.4–38.9
75–79	15,188	33.8	24.1–43.5	13,072	31.6	24.2–39.0	28,260	32.8	26.4–39.1
80–84	8,951	27.6	18.5–36.7	10,533	28.3	19.1–37.6	19,483	28.0	21.2–34.8
85+	2,262*	15.8*	6.1–25.5	4,902*	16.9	9.0–24.8	7,165	16.5	11.1–21.9
Total	207,195	46.8	43.8–49.9	150,634	39.2	36.7–41.7	357,829	43.3	41.3–45.3

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.4: Principal health condition reported by people with diabetes, by age, Australia, 2009

Health condition	0–59 years			60+ years			Total		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Diabetes	174,267	59.2	55.9–62.4	183,562	34.5	31.4–37.5	357,829	43.3	41.3–45.3
<i>Diabetes only</i>	97,644	33.2	29.9–36.4	45,265	8.5	6.9–10.1	142,909	17.3	15.7–18.8
Arthritis and related disorders	18,005	6.1	4.6–7.6	75,633	14.2	12.4–16.0	93,638	11.3	10.0–12.6
Back problems (dorsopathies)	17,806	6.0	4.1–8.0	44,078	8.3	7.1–9.4	61,884	7.5	6.4–8.6
Cardiovascular disease ^(a)	7,420	2.5	1.4–3.7	43,699	8.2	6.9–9.5	51,119	6.2	5.4–7.0
Hypertension (high blood pressure)	10,372	3.5	2.2–4.9	35,881	6.7	5.3–8.2	46,253	5.6	4.4–6.8
Mental and behavioural disorders	21,290	7.2	5.7–8.8	24,416	4.6	3.8–5.4	45,706	5.5	4.8–6.3
Other long-term conditions	45,301	15.4	12.6–18.2	125,290	23.5	21.7–25.3	170,591	20.6	19.1–22.1
Injury, poisoning and certain other consequences of external causes	9,736	3.3	2.1–4.5	17,646	3.3	2.4–4.2	27,382	3.3	2.6–4.0
Diseases of the respiratory system	4,601*	1.6*	0.5–2.6	18,459	3.5	2.5–4.4	23,060	2.8	2.1–3.5
Diseases of the ear and mastoid process	2,407*	0.8*	0.1–1.5	18,857	3.5	2.6–4.5	21,264	2.6	2.0–3.2
Other diseases of the musculoskeletal system and connective tissue	3,116*	1.1*	0.5–1.7	15,938	3.0	2.1–3.9	19,054	2.3	1.7–2.9
Diseases of the nervous system	7,108	2.4	1.3–3.5	9,506	1.8	1.1–2.4	16,614	2.0	1.5–2.5
Diseases of the digestive system	4,277*	1.5*	0.7–2.2	5,677*	1.1*	0.5–1.6	9,954	1.2	0.8–1.6
Diseases of the eye and adnexa	2,192*	0.7*	0.1–1.4	7,502	1.4	0.8–2.0	9,693	1.2	0.7–1.6
Symptoms, signs and abnormal clinical and laboratory findings not otherwise specified	2,481*	0.8*	0.2–1.5	6,935	1.3	0.7–1.9	9,417	1.1	0.7–1.5
Neoplasms (tumours/cancers)	2,648*	0.9*	0.2–1.6	5,836	1.1	0.6–1.6	8,484	1.0	0.6–1.5
Diseases of the genitourinary system	2,169*	0.7*	0.0–1.4	5,914	1.1	0.6–1.6	8,083	1.0	0.5–1.4
Other endocrine, nutritional and metabolic disorders	2,026*	0.7*	0.1–1.3	4,918*	0.9*	0.3–1.6	6,944*	0.8*	0.3–1.4
Other long-term condition (including restriction in physical activity or physical work)	390**	0.13**	**	6,132*	1.2*	0.5–1.8	6,522*	0.8*	0.4–1.2

(continued)

Table A2.4 (continued): Principal health condition reported by people with diabetes, by age, Australia, 2009

Health condition	0–59 years			60+ years			Total		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Congenital malformations, deformations and chromosomal abnormalities	1,585**	0.54**	**	1,274**	0.24**	**	2,858*	0.3*	0.1–0.6
Diseases of the skin and subcutaneous tissue	567**	0.19**	**	623**	0.12**	**	1,189**	0.14**	**
Certain infectious and parasitic diseases	—	—	—	39**	0.01**	**	39**	0.00**	**
Diseases of the blood and blood-forming organs and certain disorders involving the immune system	—	—	—	35**	0.01**	**	35**	0.00**	**
Certain conditions originating in the perinatal period	—	—	—	—	—	—	—	—	—

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

** The Relative Standard Error (RSE) for this estimate is greater than 50% and subject to sampling variability too high for practical purposes.

(a) Cardiovascular disease includes angina, myocardial infarction, other heart diseases, stroke and other diseases of the circulatory system.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.5: Prevalence of selected comorbidities among people with diabetes, by sex, Australia, 2009

Health condition	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
High blood pressure	195,521	44.2	41.2–47.2	192,698	50.1	46.8–53.4	388,219	46.9	44.5–49.4
High cholesterol	93,272	21.1	18.2–24.0	90,918	23.6	21.1–26.2	184,190	22.3	20.1–24.4
Heart disease ^(a)	79,658	18.0	16.0–20.0	49,860	13.0	11.2–14.7	129,518	15.7	14.5–16.8
Stroke	47,260	10.7	9.0–12.3	31,479	8.2	6.4–10.0	78,739	9.5	8.4–10.6
Depression	25,311	5.7	4.3–7.1	30,987	8.1	6.5–9.6	56,298	6.8	5.7–7.9
Vision loss ^(b)	22,383	5.1	3.8–6.3	22,986	6.0	4.6–7.4	45,369	5.5	4.6–6.4
Kidney-related disorder ^(c)	9,993	2.3	1.4–3.1	9,522	2.5	1.5–3.5	19,515	2.4	1.6–3.1
Total^(d)	274,954	62.2	60.1–64.2	253,144	65.8	63.9–67.7	528,098	63.9	62.1–65.6

(a) Heart disease includes angina, myocardial infarction and other heart diseases.

(b) Vision loss includes retinal disorders and defects, glaucoma, sight loss and other diseases of the eye and adnexa.

(c) Kidney-related-disorder includes urinary system disorders (except incontinence).

(d) Total includes people with at least one of the selected comorbidities (health conditions) presented in the table.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.6: Prevalence of selected comorbidities in people with and without diabetes, Australia, 2009

Health condition	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
High blood pressure	388,219	46.9	44.5–49.4	1,954,999	9.6	9.4–9.8
High cholesterol	184,190	22.3	20.1–24.4	727,943	3.6	3.4–3.7
Heart disease ^(a)	129,518	15.7	14.5–16.8	553,699	2.7	2.6–2.8
Stroke	78,739	9.5	8.4–10.6	297,020	1.5	1.3–1.6
Depression	56,298	6.8	5.7–7.9	546,455	2.7	2.5–2.8
Vision loss ^(b)	45,369	5.5	4.6–6.4	244,423	1.2	1.1–1.3
Kidney-related disorder ^(c)	19,515	2.4	1.6–3.1	77,475	0.4	0.3–0.4
Total^(d)	528,098	63.9	62.1–65.6	3,186,934	15.6	15.4–15.9

(a) Heart disease includes angina, myocardial infarction and other heart diseases.

(b) Vision loss includes retinal disorders and defects, glaucoma, sight loss and other diseases of the eye and adnexa.

(c) Kidney-related disorder includes urinary system disorders (except incontinence).

(d) Total includes people with at least one of the selected comorbidities (health conditions) presented in the table.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A2.7: Age-standardised prevalence of selected comorbidities in people with and without diabetes, Australia, 2009

Health condition	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
High blood pressure	388,219	36.7	33.7–39.7	1,954,999	9.5	9.3–9.8
High cholesterol	184,190	16.6	13.9–19.2	727,943	3.6	3.4–3.7
Heart disease ^(b)	129,518	8.5	7.2–9.9	553,699	2.7	2.6–2.8
Stroke	78,739	5.1	4.1–6.1	297,020	1.4	1.4–1.5
Depression	56,298	8.3	6.6–10.1	546,455	2.7	2.5–2.8
Vision loss ^(c)	45,369	3.2	2.3–4.2	244,423	1.2	1.1–1.3
Kidney-related disorder ^(d)	19,515	2.0	1.1–2.9	77,475	0.4	0.3–0.4
Total^(e)	528,098	50.1	46.6–53.5	3,186,934	15.6	15.3–15.8

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

(b) Heart disease includes angina, myocardial infarction and other heart diseases.

(c) Vision loss includes retinal disorders and defects, glaucoma, sight loss and other diseases of the eye and adnexa.

(d) Kidney-related disorder includes urinary system disorders (except incontinence).

(e) Total includes people with at least one of the selected comorbidities (health conditions) presented in the table.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.1: Prevalence of any impairment, limitation or restriction in people with and without diabetes, by sex and age, Australia, 2009

Sex and age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Males						
0–39	9,320	27.0	16.0–38.1	491,796	8.5	8.0–9.0
40–44	6,180*	41.6*	26.5–56.7*	85,948	12.0	10.5–13.4
45–49	6,353*	28.4*	16.5–40.3*	108,227	14.7	13.2–16.3
50–54	9,082	27.4	19.1–35.6	126,370	19.0	17.1–20.9
55–59	26,923	47.0	39.6–54.3	141,213	24.5	22.5–26.5
60–64	27,296	47.6	39.3–55.8	172,382	33.4	30.8–36.0
65–69	35,421	50.8	44.0–57.7	142,087	40.2	36.8–43.5
70–74	37,732	61.5	55.8–67.2	120,799	45.7	42.6–48.8
75–79	29,414	65.5	57.7–73.3	110,385	53.0	49.0–57.0
80–84	24,665	76.0	70.4–81.7	102,538	64.7	60.4–69.1
85+	12,238	85.4	75.5–95.2	87,187	82.2	77.8–86.6
Total	224,625	50.8	48.4–53.1	1,688,932	16.7	16.3–17.2
Females						
0–39	9,652	33.7	24.3–43.1	396,881	7.1	6.6–7.6
40–44	3,234*	31.8*	14.4–49.3*	96,154	13.1	11.6–14.6
45–49	6,064	36.7	25.4–48.0	127,863	16.9	15.2–18.6
50–54	14,539	42.4	30.4–54.4	130,999	19.3	17.5–21.1
55–59	20,993	49.3	41.7–56.9	165,122	27.3	24.9–29.7
60–64	29,202	62.0	54.1–69.9	183,012	34.4	31.6–37.2
65–69	29,259	56.3	50.0–62.6	135,048	35.4	32.4–38.5
70–74	28,463	62.1	57.7–66.6	139,318	45.7	42.0–49.3
75–79	26,783	64.8	57.0–72.6	125,527	49.8	46.5–53.2
80–84	24,172	65.0	57.1–72.9	133,983	64.0	59.8–68.2
85+	24,653	84.9	76.3–93.5	173,274	79.0	76.0–82.0
Total	217,015	56.4	53.9–59.0	1,807,182	17.6	17.1–18.1

(continued)

Table A3.1 (continued): Prevalence of any impairment, limitation or restriction in people with and without diabetes, by sex and age, Australia, 2009

Sex and age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Persons						
0–39	18,973	30.1	22.2–37.9	888,677	7.8	7.4–8.1
40–44	9,414	37.6	26.3–48.9	182,102	12.6	11.5–13.6
45–49	12,418	31.9	24.3–39.5	236,090	15.8	14.7–16.9
50–54	23,621	35.0	26.5–43.5	257,370	19.2	17.8–20.5
55–59	47,916	47.9	42.9–53.0	306,335	25.9	24.4–27.5
60–64	56,498	54.1	47.3–60.8	355,394	33.9	32.1–35.8
65–69	64,680	53.2	50.2–56.1	277,135	37.7	35.5–39.9
70–74	66,195	61.7	58.0–65.5	260,117	45.7	43.1–48.2
75–79	56,198	65.2	61.2–69.1	235,912	51.3	48.5–54.0
80–84	48,837	70.2	65.7–74.6	236,521	64.3	61.0–67.7
85+	36,891	85.1	76.4–93.7	260,461	80.0	77.3–82.8
Total	441,640*	53.4*	51.8–55.0	3,496,114*	17.2*	16.8–17.5

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.2: Age-standardised prevalence of any impairment, limitation or restriction in people with and without diabetes, by sex, Australia, 2009

Sex	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
Males	224,625	35.5	30.9–40.1	1,688,932	17.2	16.8–17.7
Females	217,015	42.4	36.9–47.8	1,807,182	16.7	16.2–17.1
Persons	441,640	38.6	35.0–42.2	3,496,114	17.0	16.6–17.3

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.3: Prevalence of any impairment, limitation or restriction in people with and without diabetes, aged 25 and over, by level of highest educational attainment, Australia, 2009

Level of education	Number	Per cent	95% CI	ASR ^(a)	95% CI
With diabetes					
Year 10 or below	216,012	59.2	55.7–62.7	58.5	51.4–65.5
Year 11 or Year 12	41,988	46.0	38.1–54.0	39.4	30.9–47.9
Certificate or diploma	110,443	50.8	47.1–54.5	39.0	32.9–45.1
Bachelor degree or above	36,775	37.7	31.4–43.9	30.9	22.5–39.4
Missing/not stated	8,083	58.5	38.4–78.7	23.6	16.4–30.7
Without diabetes					
Year 10 or below	1,261,197	35.6	34.5–36.7	28.9	27.9–29.8
Year 11 or Year 12	368,431	16.0	15.1–16.9	19.9	18.8–20.9
Certificate or diploma	844,253	20.9	20.0–21.7	22.7	22.0–23.4
Bachelor degree or above	379,763	11.6	10.9–12.3	16.0	15.1–16.9
Missing/not stated	52,576	26.0	22.1–29.8	22.6	19.5–25.6

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.4: Prevalence of a severe or profound core activity limitation in people with and without diabetes, by sex and age, Australia, 2009

Sex and age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Males						
0–39	1,927*	5.6*	0.6–10.6	173,820	3.0	2.7–3.3
40–44	1,847*	12.4*	1.5–23.4	12,807	1.8	1.2–2.3
45–49	1,588*	7.1*	0.9–13.3	24,512	3.3	2.5–4.2
50–54	2,545*	7.7*	2.9–12.5	24,589	3.7	2.7–4.7
55–59	8,163	14.2	8.6–19.9	28,117	4.9	3.7–6.0
60–64	8,374	14.6	9.4–19.8	37,711	7.3	6.0–8.6
65–69	9,079	13.0	8.6–17.4	26,597	7.5	5.8–9.2
70–74	14,916	24.3	17.9–30.7	26,747	10.1	8.0–12.2
75–79	11,142	24.8	16.0–33.6	29,902	14.4	11.3–17.4
80–84	11,322	34.9	26.0–43.8	33,551	21.2	17.4–24.9
85+	8,933	62.3	48.5–76.1	45,507	42.9	36.9–48.9
Total	79,836	18.0	16.1–19.9	463,860	4.6	4.4–4.8
Females						
0–39	4,088*	14.3*	6.0–22.6	121,806	2.2	1.9–2.4
40–44	1,757*	17.3*	4.9–29.7	22,919	3.1	2.3–4.0
45–49	1,764*	10.7*	0.9–20.4	31,375	4.1	3.0–5.3
50–54	5,935	17.3	9.7–25.0	29,643	4.4	3.3–5.4
55–59	8,227	19.3	11.6–27.0	41,027	6.8	5.7–7.8
60–64	9,545	20.3	12.1–28.5	40,442	7.6	6.2–9.0
65–69	11,950	23.0	17.2–28.8	28,302	7.4	5.9–9.0
70–74	12,378	27.0	20.5–33.5	40,662	13.3	10.4–16.3
75–79	11,599	28.1	21.4–34.8	44,236	17.6	14.9–20.2
80–84	15,489	41.7	34.4–48.9	61,869	29.6	26.5–32.6
85+	20,114	69.3	62.6–76.0	122,952	56.1	52.4–59.8
Total	102,844	26.7	24.6–28.8	585,233	5.7	5.4–6.0

(continued)

Table A3.4 (continued): Prevalence of a severe or profound core activity limitation in people with and without diabetes, by sex and age, Australia, 2009

Sex and age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Persons						
0–39	6,015*	9.5	5.1–14.0	295,625	2.6	2.4–2.8
40–44	3,604*	14.4*	6.2–22.6	35,727	2.5	1.9–3.0
45–49	3,353*	8.6*	2.7–14.5	55,887	3.7	3.0–4.5
50–54	8,479	12.6	7.7–17.4	54,232	4.0	3.2–4.8
55–59	16,390	16.4	12.2–20.6	69,143	5.9	5.0–6.7
60–64	17,918	17.1	12.6–21.7	78,153	7.5	6.6–8.3
65–69	21,028	17.3	14.1–20.5	54,899	7.5	6.2–8.7
70–74	27,293	25.5	20.5–30.4	67,409	11.8	9.8–13.8
75–79	22,741	26.4	20.7–32.0	74,138	16.1	14.3–17.9
80–84	26,811	38.5	32.6–44.4	95,420	25.9	23.8–28.1
85+	29,046	67.0	59.8–74.1	168,459	51.8	48.7–54.8
Total	182,680	22.1	20.9–23.3	1,049,093	5.2	5.0–5.3

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.5: Age-standardised prevalence of a severe or profound core activity limitation in people with and without diabetes, by sex, Australia, 2009

Sex	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
Males	79,836	10.6	8.3–12.9	463,860	4.8	4.6–5.1
Females	102,844	17.8	14.0–21.5	585,233	5.2	4.9–5.4
Persons	182,680	13.9	11.9–15.9	1,049,093	5.0	4.9–5.2

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.6: Prevalence of specific impairments, limitations or restrictions in people with and without diabetes, by type of impairment, limitation or restriction, Australia, 2009

Type of impairment, limitation or restriction	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Restriction in physical activities or in doing physical work	265,246	32.1	30.3–33.8	1,525,035	7.5	7.2–7.8
Chronic or recurrent pain or discomfort causing restriction	179,490	21.7	20.2–23.2	1,223,771	6.0	5.8–6.2
Difficulty gripping or holding things	125,764	15.2	14.0–16.4	737,773	3.6	3.5–3.8
Loss of hearing where communication is restricted or an aid is used	123,803	15.0	13.7–16.2	788,877	3.9	3.7–4.0
Incomplete use of feet or legs	94,534	11.4	10.4–12.4	480,281	2.4	2.2–2.5
Shortness of breath or breathing difficulties causing restriction	83,894	10.1	9.0–11.3	374,213	1.8	1.7–2.0
Incomplete use of arms or fingers	54,033	6.5	5.6–7.4	352,886	1.7	1.6–1.9
Nervous or emotional condition causing restriction	44,906	5.4	4.6–6.2	381,733	1.9	1.7–2.0
Loss of sight (not corrected by glasses or contact lenses)	44,565	5.4	4.5–6.3	224,234	1.1	1.0–1.2
Difficulty learning or understanding	41,829	5.1	4.4–5.7	501,072	2.5	2.3–2.6
Mental illness or condition requiring help or supervision	35,281	4.3	3.6–4.9	254,351	1.2	1.2–1.3
Blackouts, fits or loss of consciousness	28,238	3.4	2.6–4.2	184,150	0.9	0.8–1.0
Speech difficulties	17,418	2.1	1.7–2.5	245,063	1.2	1.1–1.3
Disfigurement or deformity	15,991	1.9	1.5–2.4	176,481	0.9	0.8–0.9
Other limitations and restrictions	249,298	30.1	28.0–32.3	1,533,930	7.5	7.3–7.8

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.7: Age-standardised prevalence of specific impairments, limitations or restrictions in people with and without diabetes, by type of impairment, limitation or restriction, Australia, 2009

Type of impairment, limitation or restriction	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
Restriction in physical activities or in doing physical work	265,246	20.6	17.9–23.2	1,525,035	7.3	7.1–7.5
Chronic or recurrent pain or discomfort causing restriction	179,490	14.7	12.2–17.1	1,223,771	5.9	5.7–6.1
Difficulty gripping or holding things	125,764	9.4	7.9–11.0	737,773	3.5	3.4–3.7
Loss of hearing where communication is restricted or an aid is used	123,803	5.8	4.5–7.0	788,877	3.8	3.6–3.9
Incomplete use of feet or legs	94,534	6.3	4.9–7.6	480,281	2.3	2.2–2.4
Shortness of breath or breathing difficulties causing restriction	83,894	5.9	4.4–7.4	374,213	1.8	1.7–1.9
Incomplete use of arms or fingers	54,033	3.5	2.4–4.6	352,886	1.7	1.6–1.8
Nervous or emotional condition causing restriction	44,906	6.3	4.7–7.9	381,733	1.8	1.7–2.0
Loss of sight (not corrected by glasses or contact lenses)	44,565	2.8	1.8–3.8	224,234	1.1	1.0–1.2
Difficulty learning or understanding	41,829	4.7	3.1–6.2	501,072	2.4	2.3–2.6
Mental illness or condition requiring help or supervision	35,281	4.1	2.8–5.5	254,351	1.2	1.1–1.3
Blackouts, fits or loss of consciousness	28,238	4.1	2.8–5.4	184,150	0.9	0.8–1.0
Speech difficulties	17,418	1.3	0.6–2.1	245,063	1.2	1.1–1.3
Disfigurement or deformity	15,991	1.5	0.7–2.4	176,481	0.9	0.8–0.9
Other limitations and restrictions	249,298	23.2	20.4–26.0	1,533,930	7.4	7.2–7.6

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A3.8: Prevalence of specific impairments, limitations or restrictions among people with diabetes, by age and type of impairment, limitation or restriction, Australia, 2009

Type of impairment, limitation or restriction	0–59 years			60+ years			Total		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Restriction in physical activities or in doing physical work	58,778	52.3	46.1–58.6	206,468	62.7	59.7–65.7	265,246	60.1	57.3–62.8
Chronic or recurrent pain or discomfort causing restriction	43,729	38.9	32.6–45.3	135,760	41.2	38.5–44.0	179,490	40.6	38.1–43.2
Difficulty gripping or holding things	28,948	25.8	22.0–29.5	96,816	29.4	26.7–32.1	125,764	28.5	26.4–30.5
Loss of hearing where communication is restricted or an aid is used	12,825	11.4	7.6–15.3	110,977	33.7	30.9–36.5	123,803	28.0	25.8–30.3
Incomplete use of feet or legs	15,458	13.8	10.7–16.8	79,076	24.0	21.7–26.4	94,534	21.4	19.7–23.1
Shortness of breath or breathing difficulties causing restriction	19,509	17.4	13.5–21.3	64,386	19.6	17.0–22.1	83,894	19.0	16.9–21.1
Incomplete use of arms or fingers	10,452	9.3	6.3–12.3	43,580	13.2	11.1–15.4	54,033	12.2	10.6–13.9
Nervous or emotional condition causing restriction	20,508	18.3	14.7–21.8	24,398	7.4	6.0–8.8	44,906	10.2	8.7–11.6
Loss of sight (not corrected by glasses or contact lenses)	7,711	6.9	4.3–9.4	36,854	11.2	9.2–13.2	44,565	10.1	8.4–11.8
Difficulty learning or understanding	13,542	12.1	8.3–15.8	28,287	8.6	7.4–9.8	41,829	9.5	8.2–10.7
Mental illness or condition requiring help or supervision	11,355	10.1	7.1–13.2	23,926	7.3	6.2–8.4	35,281	8.0	6.8–9.2
Blackouts, fits or loss of consciousness	13,325	11.9	8.1–15.6	14,913	4.5	3.2–5.9	28,238	6.4	5.0–7.8
Speech difficulties	2,735*	2.4*	0.8–4.0	14,683	4.5	3.5–5.4	17,418	3.9	3.2–4.7
Disfigurement or deformity	5,026*	4.5*	2.2–6.8	10,965	3.3	2.5–4.1	15,991	3.6	2.8–4.5
Other limitations and restrictions	68,123	60.6	56.0–65.3	181,175	55.0	51.3–58.8	249,298	56.4	52.9–60.0

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A4.1: Prevalence of any impairment, limitation or restriction caused by diabetes among people with diabetes, by sex and age, Australia, 2009

Age group (years)	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
0–54	11,619	11.1	7.5–14.6	8,465	9.4	5.5–13.4	20,083	10.3	8.1–12.6
55–64	9,939	8.7	5.4–11.9	11,449	12.8	8.1–17.5	21,388	10.5	7.6–13.3
65–74	15,709	12.0	9.1–14.9	11,364	11.6	7.8–15.5	27,073	11.8	9.3–14.4
75–84	7,843	10.1	6.0–14.3	6,223	7.9	5.0–10.8	14,065	9.0	6.7–11.3
85+	2,097*	14.6*	3.8–25.5	4,436*	15.3*	7.5–23.1	6,533	15.1	8.5–21.6
Total	47,207	10.7	9.0–12.4	41,936	10.9	8.9–12.9	89,143	10.8	9.5–12.1

* The Relative Standard Error (RSE) for this estimate is between 25 and 50% and should be treated with caution.

Notes

1. Based on self-reported data.
2. One record (representing an estimated 88 females aged 85+) in the Basic CURF had a disability caused by diabetes, but did not report diabetes as a current and long-term condition.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A4.2: Prevalence of blackouts, fits and loss of consciousness caused by diabetes among people with any impairment, limitation or restriction caused by diabetes, by age, Australia, 2009

Age group (years)	Number	Per cent	95% CI
0–54	5,075*	25.3*	11.5–39.1
55–64	2,007*	9.4*	2.0–16.8
65–74	1,471**	5.4**	**
75–84	2,009*	14.3*	2.7–25.8
85+	816**	12.3**	**
Total	11,378	12.8	8.0–17.5

* The Relative Standard Error (RSE) for this estimate is between 25% and 50% and should be treated with caution.

** The Relative Standard Error (RSE) for this estimate is greater than 50% and subject to sampling variability too high for practical purposes.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A4.3: Prevalence of specific impairments, limitations or restrictions caused by diabetes among people with diabetes, by sex and type of impairment, limitation or restriction, Australia, 2009

Type of impairment, limitation or restriction	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Blackouts, fits or loss of consciousness	5,924*	12.5*	6.2–18.9	5,454	13.0	7.3–18.6	11,378	12.8	8.0–17.5
Restriction in physical activities or in doing physical work	5,577*	11.8	6.2–17.4	4,931	11.7	6.1–17.4	10,508	11.8	7.6–15.9
Loss of sight (not corrected by glasses or contact lenses)	5,751	12.2	7.3–17.1	3,966	9.4*	4.7–14.2	9,717	10.9	7.7–14.1
Incomplete use of feet or legs	3,644*	7.7*	3.2–12.2	1,867	4.4*	0.7–8.2	5,512	6.2	3.4–9.0
Restriction in everyday activities due to diabetes despite receiving treatment	28,274	59.9	51.4–68.4	24,735	58.9	47.9–69.8	53,009	59.4	52.1–66.7
Other disability ^(a)	9,620	20.4	12.8–28.0	9,660	23.0	15.7–30.3	19,280	21.6	15.8–27.4

* The Relative Standard Error (RSE) for this estimate is between 25 and 50% and should be treated with caution.

(a) Other disability includes: chronic or recurrent pain or discomfort causing restriction; difficulty gripping or holding things; shortness of breath or breathing difficulties causing restriction; loss of hearing where communication is restricted or an aid is used; mental illness or condition requiring help or supervision; incomplete use of arms or fingers; difficulty learning or understanding, disfigurement or deformity; and other restriction in everyday activities due to diabetes. There were no records for speech difficulties and nervous or emotional condition causing restriction.

Note: Based on self-reported data.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.1: Prevalence of employment restrictions among people with diabetes and any impairment, limitation or restriction, aged 15–64, by sex, Australia, 2009

	Males			Females			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
Permanently unable to work	39,391	46.9	41.5–52.4	43,441	53.3	45.5–61.1	82,832	50.1	46.4–53.8
Other employment restriction ^(a)	27,905	33.3	27.0–39.5	23,386	28.7	21.9–35.4	51,291	31.0	25.6–36.4
No employment restriction	16,609	19.8	14.9–24.6	14,699	18.0	12.9–23.1	31,308	18.9	14.9–23.0

(a) Other employment restriction includes: restricted in type of job; restricted in number of hours; difficulty changing jobs or getting a preferred job; need for time off work (at least 1 day a week); need for employer provided equipment and/or special arrangements; need for support person at work or is receiving assistance from a disability job placement program or agency; and need for ongoing supervision or assistance.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.2: Prevalence of employment restrictions in people with and without diabetes, among people with any impairment, limitation or restriction, aged 15–64, Australia, 2009

	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Permanently unable to work	82,832	50.1	46.4–53.8	488,088	25.1	23.5–26.6
Other employment restriction ^(a)	51,291	31.0	25.6–36.4	827,312	42.5	41.1–43.8
No employment restriction	31,308	18.9	14.9–23.0	632,506	32.5	31.0–33.9

(a) Other employment restriction includes: restricted in type of job; restricted in number of hours; difficulty changing jobs or getting a preferred job; need for time off work (at least 1 day a week); need for employer provided equipment and/or special arrangements; need for support person at work or is receiving assistance from a disability job placement program or agency; and need for ongoing supervision or assistance.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.3: Prevalence of people permanently unable to work in people with and without diabetes, among people with any impairment, limitation or restriction, aged 15–64, by age, Australia, 2009

Age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
15–39	5,483*	32.4	18.2–46.5	79,955	12.9	11.1–14.6
40–44	4,127*	44.3	23.7–65.0	28,191	15.6	12.7–18.5
45–49	5,313*	42.9	24.2–61.6	62,253	26.5	21.9–31.2
50–54	11,500	49.1	37.3–60.9	73,699	28.9	24.9–32.8
55–59	22,546	47.4	40.1–54.7	102,950	33.9	30.6–37.1
60–64	33,864	60.7	53.4–67.9	141,040	40.1	36.6–43.6
Total	82,832	50.1	46.4–53.8	488,088	25.1	23.5–26.6

* The Relative Standard Error (RSE) for this estimate is between 25 and 50% and should be treated with caution.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.4: Age-standardised prevalence of employment restrictions in people with and without diabetes, among people with any impairment, limitation or restriction, aged 15–64, Australia, 2009

	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
Permanently unable to work	82,832	39.5	31.1–47.8	488,088	19.6	18.3–20.8
Other employment restriction ^(b)	51,291	38.9	27.2–50.7	827,312	47.6	45.6–49.5
No employment restriction	31,308	21.6	11.9–31.4	632,506	32.9	31.2–34.5

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

(b) Other employment restriction includes: restricted in type of job; restricted in number of hours; difficulty changing jobs or getting a preferred job; need for time off work (at least 1 day a week); need for employer provided equipment and/or special arrangements; need for support person at work or is receiving assistance from a disability job placement program or agency; and need for ongoing supervision or assistance.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.5: Prevalence of leave taken from work by people with and without diabetes, among people with any impairment, limitation or restriction, aged 15–64 and employed, Australia, 2009

	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
At least 1 day per week	8,575	20.3	13.5–27.1	116,199	14.5	12.7–16.3
Does not need time off work	33,594	79.7	68.6–90.7	685,839	85.5	81.8–89.2

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.6: Prevalence of participation in social and community activities in the preceding 3 months by people with and without diabetes, among people with any impairment, limitation or restriction, aged 5 and over, Australia, 2009

	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Participated in any social or community activities away from home ^(a)	370,508	88.7	85.9–91.4	3,034,282	91.5	90.7–92.3
Did not participate in any social or community activities away from home	40,019	9.6	7.6–11.5	254,648	7.7	7.1–8.3
Does not leave home	7,190	1.7	0.9–2.5	28,919	0.9	0.7–1.1

(a) Social or community activities away from home includes: visited relative or friends, restaurant or club; church activities; voluntary activity; performing arts group activity; art or craft group activity; other special interest group activities; and other activity not specified elsewhere.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.7: Prevalence of any assistance received by people with diabetes and any impairment, limitation or restriction, by sex and age, Australia, 2009

Age group (years)	Male			Female			Persons		
	Number	Per cent	95% CI	Number	Per cent	95% CI	Number	Per cent	95% CI
0–39	1,709*	18.5*	3.5–33.5	6,307	65.4	46.5–84.3	8,016	42.4	31.2–53.7
40–44	3,798*	61.9	36.8–87.0	2,088*	65.7	47.1–84.3	5,886	63.2	45.1–81.3
45–49	3,815*	60.3	39.9–80.7	4,011*	66.3	41.9–90.6	7,825	63.2	45.2–81.2
50–54	6,164	68.8	52.4–85.2	10,582	73.1	64.5–81.7	16,746	71.5	61.2–81.8
55–59	15,145	56.8	42.7–70.9	15,197	72.8	60.6–85.0	30,341	63.8	56.3–71.4
60–64	15,404	57.3	44.6–70.0	20,367	70.4	56.9–83.9	35,771	64.1	56.3–71.9
65–69	18,986	54.6	43.2–66.0	21,712	75.4	65.6–85.2	40,699	64.0	56.5–71.5
70–74	25,340	68.8	58.1–79.5	20,562	74.1	63.6–84.6	45,902	71.1	62.7–79.4
75–79	16,134	57.0	44.5–69.5	19,604	78.3	69.1–87.6	35,738	67.0	60.1–73.9
80–84	15,738	69.9	58.3–81.4	18,717	92.1	87.5–96.8	34,455	80.4	74.5–86.4
85+	9,079	97.2	87.2–107.2	15,380	92.3	88.4–96.2	24,459	94.0	88.1–100.0
Total	131,311	60.8	57.3–64.3	154,526	76.6	72.8–80.4	285,837	68.4	66.3–70.6

* The Relative Standard Error (RSE) for this estimate is between 25 and 50% and should be treated with caution.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.
3. Assistance includes: informal assistance from family, friends or neighbours; and formal assistance from organised services.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.8: Prevalence of any assistance received by people with and without diabetes, among people with any impairment, limitation or restriction, by age, Australia, 2009

Age group (years)	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
0–39	8,016	42.4	31.2–53.7	468,284	53.0	51.6–54.3
40–44	5,886	63.2	45.1–81.3	84,727	46.9	42.0–51.7
45–49	7,825	63.2	45.2–81.2	118,610	50.6	46.1–55.0
50–54	16,746	71.5	61.2–81.8	116,315	45.6	41.6–49.5
55–59	30,341	63.8	56.3–71.4	145,944	48.0	43.9–52.2
60–64	35,771	64.1	56.3–71.9	160,584	45.7	42.2–49.2
65–69	40,699	64.0	56.5–71.5	124,076	45.5	42.6–48.5
70–74	45,902	71.1	62.7–79.4	130,867	51.6	47.3–56.0
75–79	35,738	67.0	60.1–73.9	136,854	61.3	56.8–65.8
80–84	34,455	80.4	74.5–86.4	144,586	68.4	64.9–71.9
85+	24,459	94.0	88.1–100.0	155,544	82.5	79.5–85.5
Total	285,837	68.4	66.3–70.6	1,786,392	53.2	52.1–54.3

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.
3. Assistance includes: informal assistance from family, friends or neighbours; and formal assistance from organised services.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.9: Prevalence of assistance received by people with and without diabetes, among people with any impairment, limitation or restriction, by type of assistance, Australia, 2009

Type of assistance	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Informal	248,569	59.5	57.4–61.6	1,555,564	46.3	45.2–47.4
Formal (organised services)	187,704	44.9	42.4–47.5	1,041,143	31.0	29.8–32.1
Both informal <i>and</i> formal	150,435	36.0	33.6–38.4	810,314	24.1	23.1–25.1
Total	285,837	68.4	66.3–70.6	1,786,392	53.2	52.1–54.3

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.10: Age-standardised prevalence of assistance received by people with and without diabetes, among people with any impairment, limitation or restriction, by type of assistance, Australia, 2009

Type of assistance	With diabetes			Without diabetes		
	Number	ASR ^(a)	95% CI	Number	ASR ^(a)	95% CI
Informal	248,569	57.3	52.0–62.7	1,555,564	46.1	44.9–47.3
Formal (organised services)	187,704	38.5	33.1–43.8	1,041,143	28.9	27.5–30.3
Both informal and formal	150,435	33.8	28.4–39.2	810,314	23.8	22.5–25.0
Total	285,837	62.0	56.9–67.1	1,786,392	51.2	50.0–52.4

(a) Age-standardised rate. Directly standardised to the June 2001 Australian Estimated Resident Population (ERP).

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.11: Frequency of informal assistance received by people with and without diabetes, among people with any impairment, limitation or restriction and currently receiving any form of assistance, Australia, 2009

Frequency of assistance	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
At least once a day	131,223	45.9	42.6–49.2	768,688	43.0	41.6–44.5
Less than once a day	117,346	41.1	37.7–44.4	786,876	44.0	42.8–45.3
Don't receive any informal assistance	37,268	13.0	10.9–15.2	230,828	12.9	11.9–13.9

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.12: Frequency of assistance received from organised services by people with and without diabetes, among people with any impairment, limitation or restriction and currently receiving any form of assistance, Australia, 2009

Frequency of assistance	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
At least once a week	54,388	19.0	16.6–21.5	422,320	23.6	22.0–25.2
Less than once a week	133,315	46.6	43.1–50.2	618,823	34.6	33.2–36.1
Don't receive any assistance from organised services	98,134	34.3	30.3–38.4	745,250	41.7	40.2–43.3

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.13: Prevalence of assistance received from primary carers^(a) by people with and without diabetes, among people with any impairment, limitation or restriction and currently receiving assistance from a primary carer, by type of activity, Australia, 2009

Broad activity type	With diabetes			Without diabetes		
	Number	Per cent	95% CI	Number	Per cent	95% CI
Mobility tasks	77,813	82.1	77.8–86.3	363,194	70.6	68.3–72.8
Cognitive or emotional tasks	76,233	80.4	75.0–85.8	426,002	82.8	80.7–84.8
Household tasks	70,710	74.6	68.5–80.7	277,922	54.0	50.9–57.1
Transport tasks	66,238	69.8	64.6–75.1	328,926	63.9	60.4–67.4
Self-care tasks	64,458	68.0	63.3–72.7	322,829	62.7	59.8–65.6
Health-care tasks	59,235	62.5	56.0–69.0	272,537	52.9	50.0–55.8
Meal preparation	55,658	58.7	52.1–65.3	226,016	43.9	41.1–46.7
Property maintenance tasks	48,027	50.6	43.9–57.4	195,945	38.1	35.4–40.7
Paperwork tasks	44,605	47.0	40.5–53.6	199,148	38.7	36.0–41.4
Communication tasks	27,054	28.5	24.0–33.1	230,581	44.8	41.9–47.7

(a) A primary carer is a person aged 15 or over who provides the most informal assistance to a person with one or more disabilities or aged 60 and over. Primary carer in this report refers only to the primary carer whose main recipient is a co-resident.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Table A5.14: Age-standardised prevalence of assistance received from primary carers^(a) by people with and without diabetes, among people with any impairment, limitation or restriction and currently receiving assistance from a primary carer, by type of activity, Australia, 2009

Broad activity type	With diabetes			Without diabetes		
	Number	ASR ^(b)	95% CI	Number	ASR ^(b)	95% CI
Mobility tasks	77,813	92.5	62.8–122.1	363,194	85.7	82.4–88.9
Cognitive or emotional tasks	76,233	33.5	20.0–46.9	426,002	51.7	48.0–55.5
Household tasks	70,710	65.1	48.2–82.0	277,922	50.9	47.2–54.7
Transport tasks	66,238	59.2	43.7–74.7	328,926	45.2	41.5–48.9
Self-care tasks	64,458	80.0	64.4–95.7	322,829	65.0	61.5–68.4
Health-care tasks	59,235	45.5	29.4–61.7	272,537	33.3	30.0–36.7
Meal preparation	55,658	40.6	27.5–53.7	226,016	31.6	28.7–34.4
Property maintenance tasks	48,027	64.2	48.6–79.8	195,945	62.6	58.7–66.4
Paperwork tasks	44,605	67.6	50.2–85.1	199,148	61.2	57.4–65.0
Communication tasks	27,054	58.0	42.5–73.4	230,581	36.5	32.8–40.1

(a) A primary carer is a person aged 15 or over who provides the most informal assistance to a person with one or more disabilities or aged 60 and over. Primary carer in this report refers only to the primary carer whose main recipient is a co-resident.

(b) Age-standardised rate. Directly standardised to the June 2001 Australian ERP.

Notes

1. Based on self-reported data.
2. Excludes people living in cared-accommodation.

Source: AIHW 2012 analysis of ABS 2009 SDAC.

Appendix B Data Quality Statement

The primary data source for this report was the 2009 SDAC. Data presented in this report were extracted from the Basic confidentialised unit record file (CURF) data set. To protect confidentiality, the ABS removed 1,608 records from the Basic CURF before making it available for analysis. Therefore, data shown in this report may vary from those published in ABS reports. The data quality declaration for the 2009 SDAC can be found in the ABS publication *Disability, ageing and carers, Australia: summary of findings, 2009* (ABS cat. no. 4430.0)

<<http://www.abs.gov.au/ausstats/abs@.nsf/0/FB632AC7C773292BCA2577FA0011C48D?OpenDocument>.>

Appendix C Statistical methods

Weighting of sample data from 2009 SDAC

The ABS attributed a person-level weight that corrects for some of the major characteristics of the sample to better represent the Australian population. Estimates in this report were derived by applying the ABS inflation weight to the respondents. The 2009 SDAC was benchmarked to the Australian estimated resident population (ERP) as at 30 June 2009.

The reliability of survey estimates are based on the standard error (SE) and the relative standard error (RSE).

Crude rates and age-specific rates

Crude rates are defined as the number of cases or events divided by the total population. Age-specific rates are defined as the number of cases or events for a specified age group divided by the total population in that age group.

In this report, crude rates and age-specific rates are expressed as percentages and indicate the overall prevalence of diabetes and/or disability in Australia.

Age-standardised rates

Age-standardisation is a technique used to eliminate the effect of differences in population age structures when comparing rates across different population groups.

Age-standardisation is used in this report when comparing rates between people with diabetes and people without diabetes.

The direct method of age-standardisation was used throughout this report.

Direct age-standardisation

Direct age-standardisation applies the age-specific rates to a 'standard population' in order to determine the rate that would have occurred in the standard population.

The 30 June 2001 Standard Population (ABS 2013a) was used for all age-standardisation analyses in this report.

The calculation of direct age-standardised rates consists of three steps:

- Calculate the age-specific rate for each age group.
- Calculate the expected number of cases in each age group by multiplying the age-specific rates by the corresponding standard population for each age group.
- Sum the expected number of cases in each age group and divide this sum by the total of the standard population to give the age-standardised rate.

Five-year age groups were used for standardisation of data from the 2009 SDAC where the RSE of the estimate was less than 50%. However, due to small sample sizes, broader age groups were used in standardising the survey data in some analyses.

Significance testing

The observed value of a rate may vary due to chance, even when there is no variation in the underlying value of the rate.

A 95% confidence interval describes a span of numbers around the estimate that has a 95% chance of including the true value. Where the 95% confidence intervals of two rates do not overlap, the corresponding rates are deemed to be statistically significantly different from each other.

In order to approximately indicate whether two rates derived from the 2009 SDAC are statistically different, 95% confidence intervals were calculated, and significant differences highlighted.

Assessing reliability of estimates from 2009 SDAC

Standard error of number estimates

The delete-a-group Jackknife's weight replication method was used to derive the SE of estimates for the 2009 SDAC.

The variability between these replicate estimates (denoting $X_{(w)}$ for group number w) is used to measure the SE of the original weighted estimate X , using the formula:

$$SE(X) = \sqrt{\left(\frac{(w-1)}{w} \times \sum (X_{(w)} - X)\right)^2}$$

Where w = the number of replicate weights

$X_{(w)}$ = estimate obtained using replicate weights for replicate group w

X = estimate from using full sample weights

Relative standard error of number estimates

The RSE is obtained by expressing the SE as a percentage of the estimate (X) and is a measure of the percentage errors likely to have occurred due to sampling. The RSE of an estimate is calculated as follows:

$$RSE(X)\% = \left(\frac{SE(X)}{X}\right) \times 100$$

Caution should be exercised when a RSE is between 25% and 50%, and estimates with a RSE above 50% are considered unreliable. Age-standardisation was not performed where the RSE of an age-specific number estimate was greater than 50%.

Relative standard error of the ratio of two number estimates (rates)

The RSE for rates were derived from the RSE of both number estimates for the numerator (X) and the denominator (Y) as follows:

$$RSE\left(\frac{X}{Y}\right) = \sqrt{RSE(X)^2 - RSE(Y)^2}$$

Where X is a subset of Y and Y is a survey estimate of the number of people in a group.

Standard error of the ratio of two number estimates (rates)

The SE for rates was derived as follows:

$$SE\left(\frac{X}{Y}\right) = RSE\left(\frac{X}{Y}\right) \times \left(\frac{X}{Y}\right)$$

Confidence interval for estimates (number and rates)

The 95% confidence interval around number estimates (X) was derived as follows:

$$UCL = X + 1.96 \times SE(X)$$

$$LCL = X - 1.96 \times SE(X)$$

The 95% confidence interval around rates $\left(\frac{X}{Y}\right)$ was derived as follows:

$$UCL = \left(\frac{X}{Y}\right) + 1.96 \times SE\left(\frac{X}{Y}\right)$$

$$LCL = \left(\frac{X}{Y}\right) - 1.96 \times SE\left(\frac{X}{Y}\right)$$

Where UCL = upper confidence limit

LCL = lower confidence limit

As with all statistical comparisons, care should be exercised in interpreting the results. A non-significant difference between two rates may indicate no true difference, or could indicate that numbers of observations are too small to detect a true statistically significant difference. Judgment should be exercised in deciding whether the size of the difference observed is of practical importance.

Glossary

activity: An activity comprises one or more tasks. In the 2009 SDAC, tasks have been grouped into 10 activities: cognition or emotion, communication, health care, household chores, meal preparation, mobility, property maintenance, reading or writing, self-care, transport.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

age-standardisation: A method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, then the disease rates that would have occurred with that structure are calculated and compared.

angina: Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, as in exercise.

arthritis: A group of disorders in which there is inflammation on the joints, which can become stiff, painful, swollen or deformed.

blood cholesterol: A fatty substance produced by the liver and carried by the blood to supply the rest of the body. Its function is to supply material for cell walls and for steroid hormones, but, if levels in the blood are too high, it can lead to atherosclerosis and heart disease.

blood pressure: The force exerted by the blood on the walls of the arteries as it is pumped around the body by the heart. It is written, for example, as 134/70 mmHg, where the upper number is the systolic pressure (maximum force against the arteries as the heart muscle contracts to pump the blood out) and the lower number is the diastolic pressure (minimum force against the arteries as the heart relaxes and fills with blood). Levels of blood pressure can vary greatly from person to person and from moment to moment in the same person.

cardiovascular disease: Any disease of the heart or blood vessels, including heart attack, angina, stroke and peripheral vascular disease.

cared-accommodation: Defined by the ABS to include hospitals, aged care accommodation such as nursing homes and aged-care hostels, cared components of retirement villages, and other 'homes' such as children's homes.

cataract: A cloudy or opaque area in the lens of the eye.

chronic diseases: Term applied to a diverse group of diseases, such as diabetes, heart disease and arthritis, which tend to be long-lasting and persistent in their symptoms and development.

complications: A secondary problem that arises from a disease, injury or treatment (such as surgery) that makes a condition worse.

comorbidity: When a person has two or more health conditions at the same time.

condition (health condition): A broad term that can be applied to any health problem, including symptoms, diseases, and various risk factors, such as high blood cholesterol.

confidence interval (CI): A statistical term describing a range (interval) of values within which we can be 'confident' that the true value lies, usually because it has a 95% or higher chance of doing so.

core activities: In the 2009 SDAC, core activities are communication, mobility and self-care.

depression: A mood disorder with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

diabetes (diabetes mellitus): A chronic condition in which the body cannot properly use its main energy source, the sugar glucose. This is due to a relative or absolute deficiency in insulin, a hormone that is produced in the pancreas and helps glucose enter the body's cells from the bloodstream and then be processed by them. Diabetes is marked by an abnormal build-up of glucose in the blood, and it can have serious short- and long-term effects. The three main types of diabetes are Type 1 diabetes, Type 2 diabetes and gestational diabetes.

dialysis/haemodialysis: A process used to treat kidney failure. A machine is connected to the patient's bloodstream and then filters the blood externally to the body, removing water, excess substances and waste from the blood, as well as regulating the levels of circulating chemicals. In doing this, the machine takes on the role normally played by the kidneys.

disability: An umbrella term for any or all of: an impairment of body structure or function, a limitation in activities, or a restriction in participation. Disability is a multidimensional concept, and is conceived as an interaction between health conditions and the environment. In this report, disability refers to the presence of one or more of a defined set of limitations, restrictions or impairments (see Box 1.4).

disability-adjusted life year (DALY): A year of healthy life lost, either through premature death or equivalently through living with disability due to illness or injury. It is the basic unit used in burden of disease and injury estimates.

glaucoma: An eye disease associated with increased pressure within the eye.

glucose: The main sugar that the body uses for energy. Glucose is a simple sugar that comes from the breakdown of carbohydrates in the diet, as well as from the breakdown of glycogen (the storage form of glucose) in the liver. The body requires the hormone insulin to use glucose properly.

heart attack (myocardial infarction): A life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is myocardial infarction.

high blood pressure (hypertension): The definition of high blood pressure (also known as hypertension) can vary, but a well-accepted one is from the WHO: a systolic blood pressure of 140 mmHg or more or a diastolic blood pressure of 90 mmHg or more, or [the person is] receiving medication for high blood pressure.

hypoglycaemia: A low blood glucose level.

impairment: In the context of health experience, an impairment is defined by the International Classification of Functioning, Disability and Health (ICF) as a loss or abnormality in body structure or physiological function (including mental functions). Abnormality is used to refer to a significant variation from established statistical norms.

insulin: A hormone that is produced by the pancreas and regulates the body's energy sources, most notably the sugar glucose.

limitation: A person has a limitation if they have difficulty doing a particular activity, need assistance from another person or use an aid.

long-term (health) condition: A term used in ABS surveys to describe a health condition that has lasted, or is expected to last, at least 6 months.

mental illness: Disturbances of mood or thought that can affect behaviour and distress the person or those around them, so the person has trouble functioning normally. They include anxiety disorders, depression and schizophrenia.

participation: The ICF defines participation in terms of involvement in life situations, from basic learning and applying knowledge, through general tasks and demands, to domestic life, relationships, education and employment, and community life.

peripheral vascular disease: Pain in the legs due to an inadequate blood supply to them.

prevalence: The number or proportion (of cases, instances, and so on) present in a population at a given time.

primary carer: A person who provides most of the informal assistance, in terms of help or supervision, to a person with one or more disabilities or aged 60 and over in one or more of the core activities (communication, mobility and self-care). The 2009 SDAC included as carers people aged 15 and over who identified themselves as carers or were nominated by a care recipient as a carer.

restriction: A person has a restriction if he/she has difficulty participating in life situations, needs assistance from another person or uses an aid.

risk factor: Any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others are not necessarily so. Along with their opposites, protective factors, risk factors are known as determinants.

severe or profound core activity limitation: person with profound or severe core limitation needs help or supervision always (profound) or sometimes (severe) to perform activities that most people undertake at least daily; that is, the core activities of self-care, mobility and/or communication.

socioeconomic status: An indication of how 'well off' a person or group is. In this report, level of highest educational attainment is used as a proxy for socioeconomic status.

stroke: When an artery supplying blood to the brain suddenly becomes blocked or bleeds. A stroke often causes paralysis of parts of the body normally controlled by that area of the brain, or speech problems and other symptoms.

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The report examines the association between diabetes and disability in Australia using data from the Australian Bureau of Statistics' Survey of Disability, Ageing and Carers 2009.

People with diabetes were twice as likely to have a disability (39% compared with 17%) and almost 3 times as likely to have a severe or profound limitation (14% compared with 5%) than people without diabetes. Among working-age people with diabetes and disability, 40% said they were permanently unable to work compared with 20% of people with a disability who did not have diabetes.

People with diabetes reported higher rates of high blood pressure, high cholesterol, heart disease, stroke, depression, vision loss and kidney related disorders than people without diabetes.