

# 14 Patient risk factors

General practice is a useful intervention point for health promotion because about 88% of Australians visit a GP at least once in any given year.<sup>3</sup> GPs, through ongoing professional education, have substantial knowledge of population health, screening programs and other interventions. They are also in an ideal position to advise patients about the benefits of health screening, and to counsel patients about their lifestyle choices on an individual basis.

Since April 1998, a section on the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are described in Section 2.4.

The patient risk factors measured include self-reported height and weight (for calculation of body mass index, BMI), alcohol consumption and smoking status. Patient risk factors are investigated for a subsample of 40 of the 100 patient encounters recorded by each GP. An example of the encounter form with the patient risk factor SAND questions is included in Appendix 1. The methods used in the risk factor substudies reported in this chapter are described in each section below.

Data on patient risk factors measured in SAND are reported for each year from 1998–99 to 2007–08 in the 10 year summary report *General practice activity in Australia 1998–99 to 2007–08: 10 year data tables* available from [www.aihw.gov.au/publications/index.cfm/subject/19](http://www.aihw.gov.au/publications/index.cfm/subject/19) (AIHW catalogue number GEP 23).

Summaries of results from all SAND substudies from April 1999 to July 2006 inclusive have been published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*.<sup>11</sup> Abstracts of results and the research tools used in SAND substudies conducted between August 2006 and March 2007 were published in *General practice activity in Australia 2006–07*<sup>2</sup> and those conducted from April 2007 to January 2008 are included in Chapter 15 of this report.

## 14.1 Body mass index

It is estimated that overweight and obesity accounted for 7.5% of the total burden of disease in Australia in 2003, and ranked third<sup>63</sup>, an increase from 4.3% of total burden and sixth rank in 1996.<sup>64</sup> The 1999–00 Australian Diabetes, Obesity and Lifestyle Study (AusDiab) estimated that 60% of Australians aged over 25 years were overweight or obese (BMI > 25). Men were more likely to be overweight or obese than women (67% compared with 52%).<sup>65</sup>

### Method

Patient BMI was investigated for a subsample of 40 of the 100 patient encounters. Each GP was instructed to ask the patient (or their carer in the case of children):

- What is your height in centimetres (without shoes)?
- What is your weight in kilograms (unclothed)?

Metric conversion tables (feet and inches; stones and pounds) were provided to the GP.

The BMI for an individual was calculated by dividing weight (kilograms) by height (metres) squared. The recent WHO recommendations<sup>66</sup> for BMI groups were used, which specify that an adult (18 years and over) with a BMI:

- less than 18.5 is underweight
- greater than or equal to 18.5 and less than 25 is normal
- greater than or equal to 25 and less than 30 is overweight
- of 30 or more is obese.

The reported height for adult patients was checked against sex-appropriate upper and lower height limits from the Australian Bureau of Statistics (ABS).<sup>67</sup> Encounters with adults whose reported heights were outside the sex-appropriate limits were excluded from the analysis.

The standard BMI cut-offs described above are not appropriate in the case of children. Cole et al. developed a method which calculates the age-sex-specific BMI cut-off levels for overweight and obesity specific to children aged 2–17 years.<sup>68</sup> There are three categories defined for childhood BMI: underweight/normal, overweight and obese. This method, based on international data from developed Western cultures, is applicable in the Australian setting. The reported height of children was checked against age-sex-appropriate upper and lower height limits from the ABS.<sup>67</sup> Encounters with children whose reported heights were outside either of the age-sex-appropriate limits were excluded from the analysis.

The BEACH data on BMI are presented separately for adults (aged 18 years and over) and children (aged 2–17 years). The standard BMI cut-offs have been applied for the adult sample, and the method described by Cole et al. has been used for defining overweight and obesity in children (aged 2–17 years).<sup>68</sup>

## Results

### Body mass index of adults

The sample size was 31,062 patients aged 18 years and over at encounters with 952 GPs.

- More than half (59.3%) of the patients were overweight or obese – 23.9% obese and 35.4% overweight (Table 14.1).
- Only 2.5% of patients were underweight (Table 14.1).
- Four out of ten adult patients had a BMI that was in the normal range (Table 14.1).
- Males were more likely to be overweight or obese (66.1%, 95% CI: 65.0–67.2) than females (54.8%, 95% CI: 53.7–55.8) (results not tabled).
- Overweight/obesity was most prevalent among male patients aged 45–64 years (74.5%) and those aged 65–74 years (72.0%) (Figure 14.1).
- Among female patients overweight/obesity was most prevalent in those aged 65–74 years (66.9%) and 45–64 years (63.3%) (Figure 14.1).
- Underweight was most prevalent in patients aged 18–24 years and 75 years and over. Of young adults (18–24 years), 6.6% of females and 2.3% of males were underweight, and among those aged 75 years and over, 4.9% of women and 1.9% of men were underweight (Figure 14.2).

These results are consistent with those of the 1999–00 AusDiab study<sup>65</sup> (60% of adults aged > 25 years were overweight or obese) and with the ABS 2004–05 figures from the National

Health Survey, which reported that 53% of adults aged 18 or more were overweight or obese.<sup>69</sup>

## Estimation of body mass index for the adult general practice patient population

The BEACH study reports data about patient BMI from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who will attend a GP at least once. For the first time in this report we have weighted the BEACH sample to estimate the BMI of the GP-patient population (that is, the 14 million adult patients who have attended a GP at least once), using the method described by Knox et al. (2008).<sup>3</sup>

The estimates for the GP-patient population (after adjusting for age-sex attendance patterns) suggest that 23.5% of the patient population were obese, 35.3% were overweight, 38.9% were normal weight and 2.3% were underweight (Table 14.1).

**Table 14.1: Patient body mass index (aged 18 years and over)**

BMI class	Male <sup>(a)</sup>		Female <sup>(a)</sup>		Total respondents	
	Per cent in BEACH sample (95% CI) (n = 12,126)	Per cent in patient population (95% CI) <sup>(b)</sup>	Per cent in BEACH sample (95% CI) (n = 18,703)	Per cent in patient population (95% CI) <sup>(b)</sup>	Per cent in BEACH sample (95% CI) (n = 31,062)	Per cent in patient population (95% CI) <sup>(b)</sup>
Obese	23.1 (22.1–24.1)	22.8 (21.8–23.8)	24.3 (23.5–25.2)	23.9 (23.0–24.8)	23.9 (23.1–24.6)	23.5 (22.7–24.2)
Overweight	43.0 (42.0–44.0)	42.1 (41.0–43.2)	30.4 (29.7–31.2)	29.7 (28.9–30.4)	35.4 (34.7–36.0)	35.3 (34.6–36.0)
Normal	32.7 (31.6–33.8)	34.0 (32.7–35.2)	41.9 (40.9–43.0)	43.1 (42.1–44.2)	38.3 (37.4–39.2)	38.9 (38.0–39.9)
Underweight	1.2 (1.0–1.4)	1.2 (0.9–1.4)	3.3 (3.0–3.6)	3.3 (3.0–3.6)	2.5 (2.3–2.7)	2.3 (2.1–2.5)

(a) Patient sex was not recorded for 233 respondents.

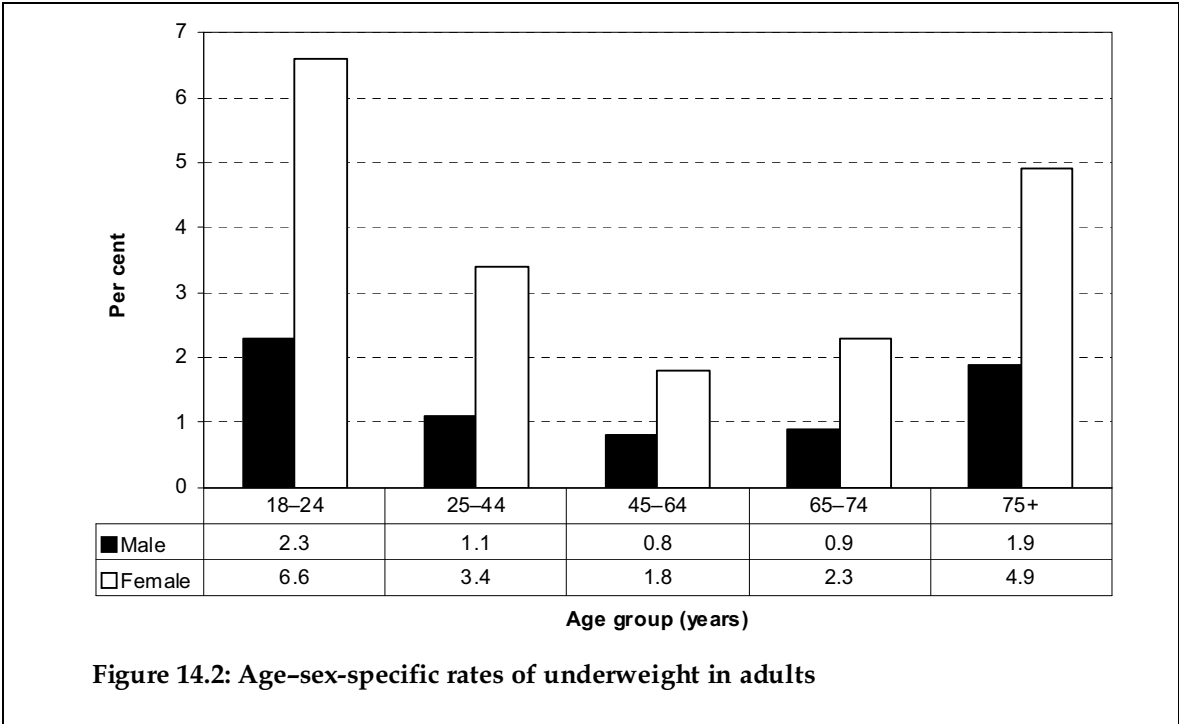
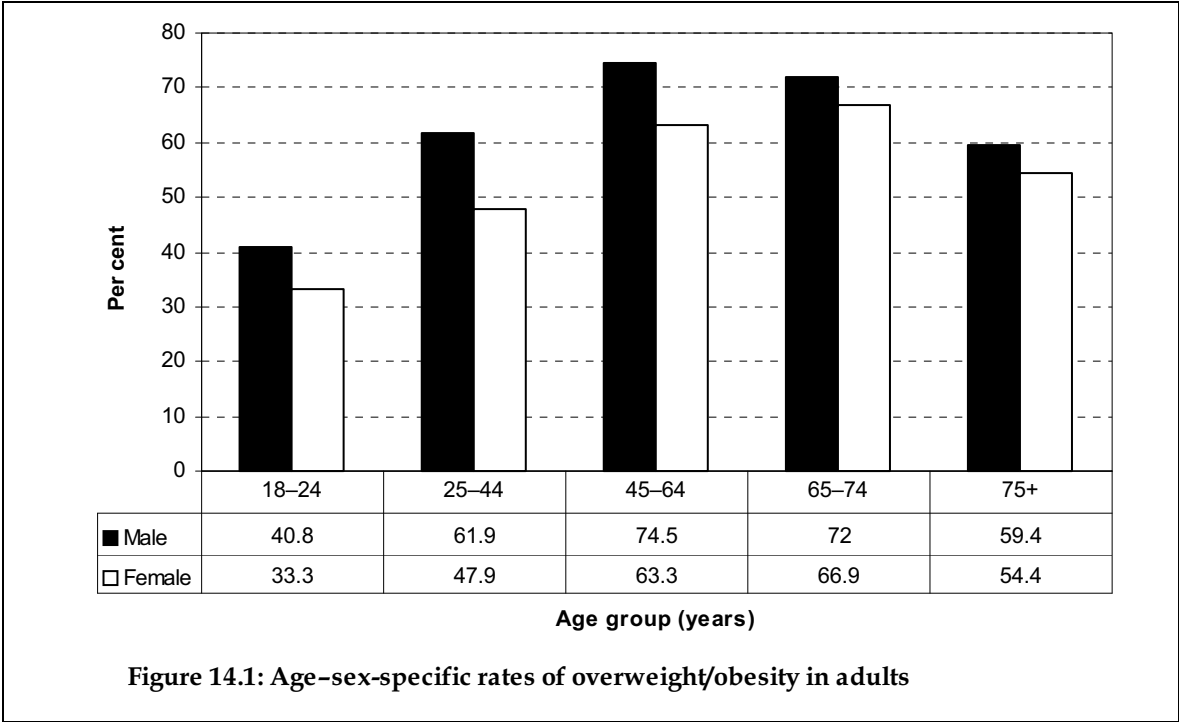
(b) Estimation of BMI among the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once)  $n = 14$  million.

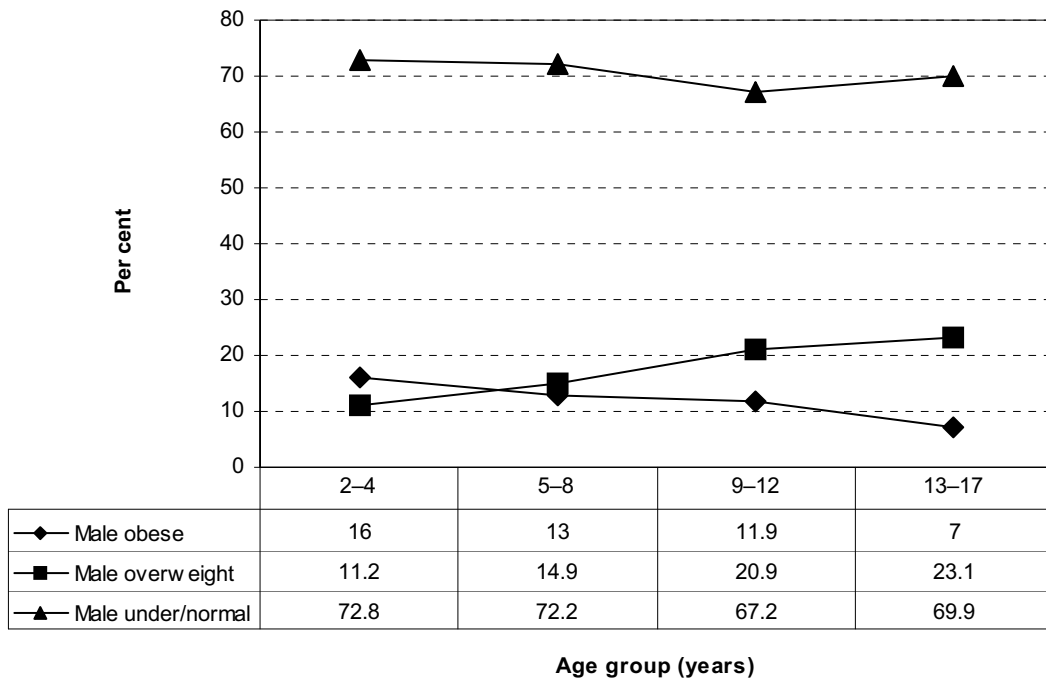
Note: BMI—body mass index; CI—confidence interval.

## Body mass index of children

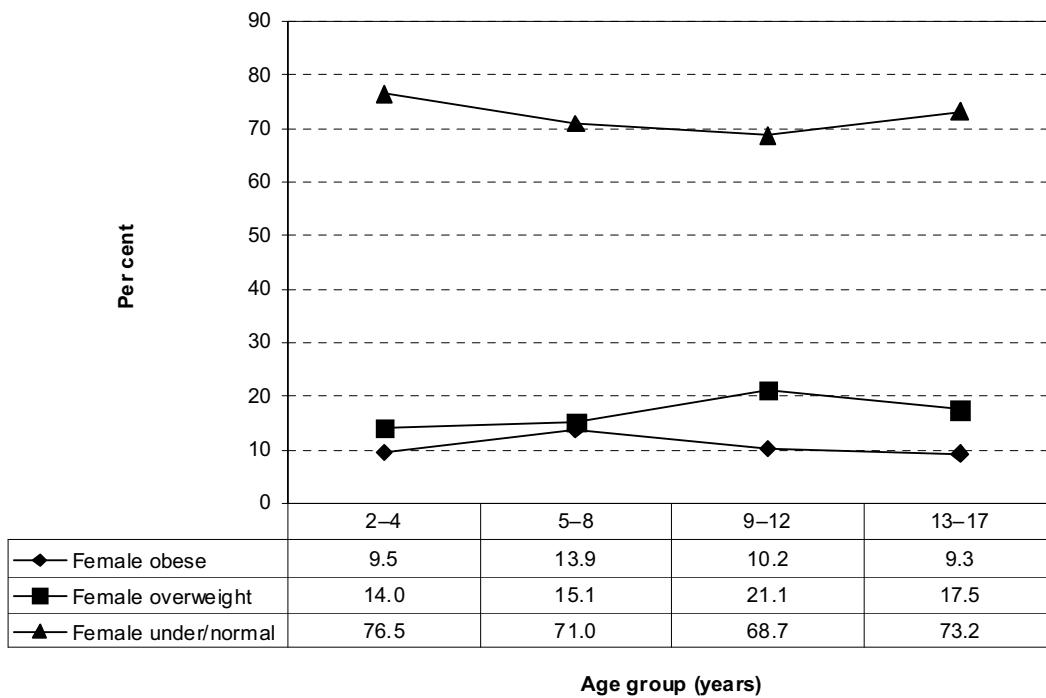
BMI was calculated for 3,046 patients aged 2–17 years at encounters with 801 GPs.

- Three in 10 children (28.3%, 95% CI: 26.4–30.2) were classed as overweight or obese—this consists of 11.2% (95% CI: 10.0–12.5) obese and 17.1% (95% CI: 15.7–18.5) overweight (results not tabled).
- There was no difference in prevalence of overweight/obesity among male (29.3%, 95% CI: 26.8–31.8) and female children (27.4%, 95% CI: 25.0–29.9) (results not tabled).
- The age-specific rates of obesity followed similar patterns for both sexes (figures 14.3 and 14.4).





**Figure 14.3: Age-specific rates of obesity, overweight and normal/underweight in male children**



**Figure 14.4: Age-specific rates of obesity, overweight and normal/underweight in female children**

## 14.2 Smoking (patients aged 18 years and over)

Tobacco smoking is the leading cause of drug-related death and hospital separations in Australia.<sup>70</sup> It has been identified as the risk factor associated with the greatest disease burden, accounting for 7.8% of the total burden of disease in Australia in 2003<sup>63</sup>, a decrease from 9.7% of total burden in 1996.<sup>64</sup> According to the 2004 National Drug Strategy Household Survey (NDSHS), 17.4% of Australians aged 14 years and over smoked daily: 18.6% of males and 16.3% of females.<sup>71</sup>

### Method

GPs were instructed to ask adult patients (18 years and over):

- What best describes your smoking status?      Smoke daily  
   Smoker occasionally  
   Previous smoker  
   Never smoked

Respondents were limited to adults aged 18 years and over because there are ethical concerns about approaching the younger patient group to ask for information on smoking for survey purposes. In addition, the reliability of this information from patients aged less than 18 years may be compromised if a parent is present at the consultation.

### Results

The smoking status of 31,652 adult patients was established at encounters with 952 GPs. Table 14.2 shows that:

- 16.5% of adult patients were daily smokers
- significantly more male (19.8%) than female patients (14.4%) were daily smokers
- only 2.9% of adult patients were occasional smokers
- more than a quarter of adults (27.9%) were previous smokers.

Daily smoking was most prevalent among younger adult patients (aged 18–24 years and 25–44 years), with almost one in four of these patients reporting daily smoking. Almost 60% of male and 25% of female patients aged 75 years and over were previous smokers, but only 5% of males and 4% of females in this age group were daily smokers (figures 14.5 and 14.6).

### Estimation of smoking in the adult general practice patient population

The BEACH study reports data about patient smoking habits from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the smoking status among the GP-patient population, using the method described by Knox et al. (2008).<sup>3</sup>

The estimates for the GP-patient population (after adjusting for age-sex attendance patterns) show that 19.3% of the patient population were daily smokers, 3.5% were occasional

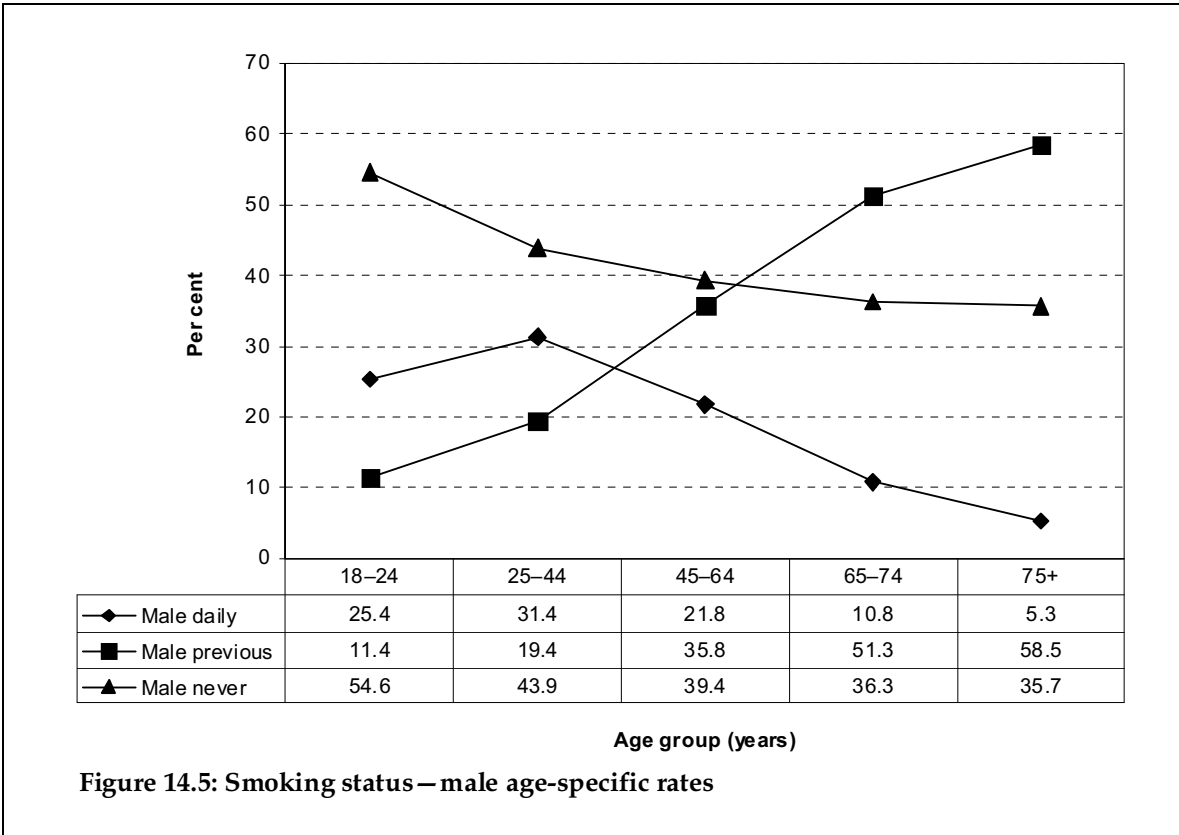
smokers, 25.7% were previous smokers and 51.5% had never smoked. Male patients in the total general practice population were significantly more likely to be daily (23.4%), occasional (4.1%) and previous smokers (30.5%) than females patients (15.9%, 3.0% and 21.7%, respectively) (Table 14.2).

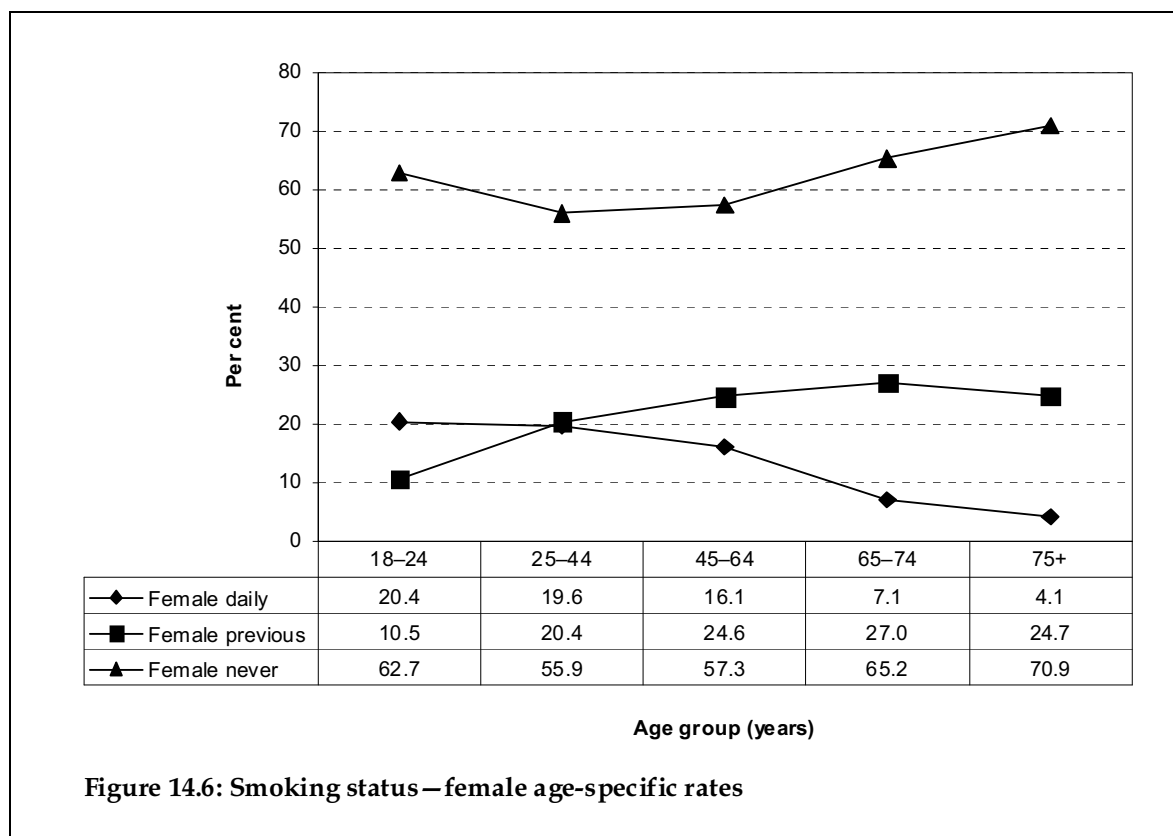
**Table 14.2: Patient smoking status (aged 18 years and over)**

Smoking status	Male <sup>(a)</sup>		Female <sup>(a)</sup>		Total respondents	
	Per cent in BEACH sample (95% CI) (n = 12,335)	Per cent in patient population (95% CI) <sup>(b)</sup>	Per cent in BEACH sample (95% CI) (n = 19,081)	Per cent in patient population (95% CI) <sup>(b)</sup>	Per cent in BEACH sample (95% CI) (n = 31,652)	Per cent in patient population (95% CI) <sup>(b)</sup>
Daily	19.8 (18.8–20.8)	23.4 (22.2–24.5)	14.4 (13.7–15.2)	15.9 (15.1–16.7)	16.5 (15.8–17.3)	19.3 (18.5–20.1)
Occasional	3.3 (2.9–3.7)	4.1 (3.6–4.6)	2.6 (2.3–2.9)	3.0 (2.7–3.3)	2.9 (2.7–3.2)	3.5 (3.2–3.9)
Previous	36.5 (35.3–37.7)	30.5 (29.4–31.6)	22.3 (21.4–23.1)	21.7 (20.8–22.5)	27.9 (27.1–28.6)	25.7 (24.9–26.5)
Never	40.4 (39.2–41.6)	42.0 (40.7–43.3)	60.7 (59.6–61.7)	59.4 (58.3–60.5)	52.7 (51.7–53.6)	51.5 (50.4–52.5)

(a) Patient sex was not recorded for 236 respondents.  
 (b) Estimation of the smoking status of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) n = 14 million.

Note: CI—confidence interval.





### 14.3 Alcohol consumption (patients aged 18 years and over)

In people aged 65 years and over, low to moderate consumption of alcohol has been found to have a preventive effect against selected causes of morbidity<sup>70</sup> (in particular ischaemic heart disease).<sup>72</sup> The National Health and Medical Research Council in a review of the evidence concluded that in young women there was no evidence of any cardiovascular mortality benefit from alcohol consumption, and in young men any benefit was outweighed by alcohol-related other causes of death.<sup>72</sup> In 2003 alcohol consumption accounted for 3.3% of the total burden of disease in Australia; however, after taking into account the benefit derived from low to moderate alcohol consumption, this fell to 2.3%.<sup>63</sup>

The 2004 NDSHS found that 9.8% of people aged 14 years and over (10.1% of males and 9.6% of females) drank at levels considered to be risky or high risk for their health in the long term.<sup>71</sup> This risk level of alcohol consumption was based on the NHMRC 2001 guidelines.<sup>73</sup> The NDSHS also found that 35.4% of people aged 14 years and over (40.3% of males and 30.7% of females) drank alcohol during the preceding 12 months at levels that put their health at risk in the short term.<sup>71</sup>



## Method

To measure alcohol consumption, BEACH uses three items from the WHO Alcohol Use Disorders Identification Test (AUDIT)<sup>74</sup>, with scoring for an Australian setting.<sup>75</sup> Together, these three questions assess 'at-risk' alcohol consumption. The scores for each question range from zero to four. A total (sum of all three questions) score of five or more for males or four or more for females suggests that the person's drinking level is placing him or her at risk.<sup>75</sup>

GPs were instructed to ask adult patients (18 years and over):

- How often do you have a drink containing alcohol?  
Never  
Monthly or less  
Once a week/fortnight  
2-3 times a week  
4+ times a week
- How many standard drinks do you have on a typical day when you are drinking?
- How often do you have six or more standard drinks on one occasion?  
Never  
Less than monthly  
Monthly  
Weekly  
Daily or almost daily

A standard drinks chart was provided to each GP to help the patient identify the number of standard drinks consumed.

Respondents were limited to adults aged 18 years and over because there are ethical concerns about approaching the younger patient group to ask for information on alcohol consumption for survey purposes. In addition, the reliability of this information from patients aged less than 18 years may be compromised if a parent is present at the consultation.

## Results

Patients' self-reported alcohol consumption was recorded at 30,796 adult patient (18 years and over) encounters with 951 GPs.

- More than one-quarter of adults reported drinking alcohol at at-risk levels (26.2%) (Table 14.3).
- At-risk drinking was more prevalent among male patients (31.7%) than female patients (22.6%) (Table 14.3).
- At-risk drinking was most prevalent in the 18-24 year age group, particularly among men. In this age group half of the males and more than one-third of the females reported at-risk alcohol consumption (Figure 14.7).
- The proportion of patients who were at-risk drinkers decreased with age for both males and females (Figure 14.7).

These estimates are a little lower than those for short-term risk from the NDSHS.<sup>76</sup> This is likely to be due to the difference in the age ranges studied (14 years and over in NDSHS and 18 years and over in BEACH), and to differences in the age-sex distributions of the study populations.

## Estimation of alcohol consumption in the adult general practice patient population

The BEACH study reports data about patient alcohol consumption from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the alcohol consumption among the GP-patient population, using the method described by Knox et al. (2008).<sup>3</sup>

The estimates for the GP-patient population (after adjusting for age-sex attendance patterns) show that 29.3% of the patient population were at-risk drinkers, 44.2% were responsible drinkers and 26.5% were non-drinkers. Male patients in the total general practice population were significantly more likely to be at-risk drinkers (35.7%) than females patients (24.0%) (Table 14.3).

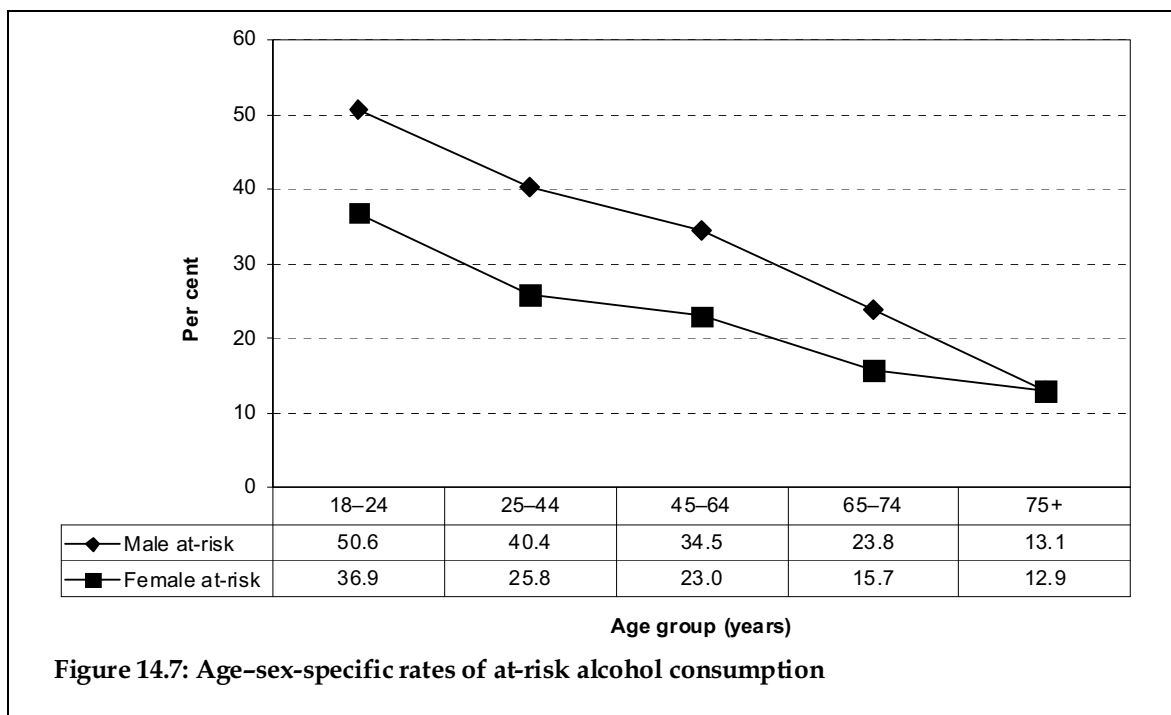
Readers interested in the relationship between morbidity managed and alcohol consumption will find more information in Proude et al. *The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia.*<sup>77</sup>

**Table 14.3: Patient alcohol consumption (aged 18 years and over)**

Alcohol consumption	Male		Female		Total respondents	
	Per cent in BEACH sample (95% CI) (n = 12,071)	Per cent in patient population (95% CI) <sup>(a)</sup>	Per cent in BEACH sample (95% CI) (n = 18,725)	Per cent in patient population (95% CI) <sup>(a)</sup>	Per cent in BEACH sample (95% CI) (n = 30,796)	Per cent in patient population (95% CI) <sup>(a)</sup>
At-risk drinker	31.7 (30.5–32.9)	35.7 (34.3–37.1)	22.6 (21.6–23.5)	24.0 (23.0–25.0)	26.2 (25.3–27.1)	29.3 (28.3–30.3)
Responsible drinker	47.6 (46.4–48.8)	45.0 (43.8–46.3)	42.6 (41.6–43.7)	43.4 (42.4–44.5)	44.6 (43.7–45.5)	44.2 (43.3–45.1)
Non-drinker	20.7 (19.6–21.8)	19.3 (18.2–20.4)	34.8 (33.5–36.1)	32.6 (31.3–33.9)	29.3 (28.2–30.3)	26.5 (25.5–27.5)

(a) Estimation of the alcohol consumption of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once) n = 14 million.

Note: CI—confidence interval.



## 14.4 Risk factor profile of adult patients

All patient risk factor questions (BMI, smoking and alcohol consumption) were asked of the same subsample of patients. This allows us to build a risk profile of this sample of adult patients. For the purposes of this analysis, being overweight or obese, a daily smoker or an at-risk drinker are considered risk factors. A risk factor profile was prepared for 30,002 adult patients (aged 18 years and over) (Table 14.4).

- Half of the adult respondents had one risk factor. The most common was overweight (22.6% of adults) followed by obesity (16.0%).
- One in five patients had two risk factors, the most common combinations being:
  - overweight and at-risk alcohol consumption – 7.1% of patients
  - obesity and at-risk alcohol consumption – 4.1% of patients
  - daily smoking and at-risk alcohol consumption – 3.3% of patients.
- A small group of patients (4.1%) had all three risk factors.

Table 14.5 shows the number of risk factors by patient sex.

- Females were significantly more likely to have no risk factors (29.9%) than males (20.2%).
- One-third of males (31.8%) had two or three risk factors compared with one-fifth (18.7%) of females.

### Estimation of the risk profile of the adult general practice patient population

The BEACH study reports data about patient risk factors from a sample of the attending general practice patients. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample

when compared with the total population who attend a GP at least once (about 14 million adults). For the first time in this report we have weighted the BEACH sample to estimate the risk factor profile among the GP-patient population, using the method described by Knox et al. (2008).<sup>3</sup>

The estimates for the GP-patient population (after adjusting for age-sex attendance patterns) show that:

- one-quarter of patients had no risk factors (24.8%)
- almost half of the adult patients had one risk factor (48.2%). The most common was overweight (20.9% of adults) followed by obesity (14.8%)
- one in five patients had two risk factors (21.9%). The most common combinations were overweight and at-risk alcohol consumption (7.7%), followed by obese and at-risk alcohol consumption (4.3%)
- one in twenty patients had three risk factors (Table 14.4).

Table 14.5 shows the estimation of number of risk factors in the total GP-patient population by sex. Male patients in the total patient population were significantly more likely to have two (28.2%) or three risk factors (7.2) and significantly less likely to have none (18.8%) or one risk factor (45.8%) than female patients (16.7%, 3.3%, 29.8% and 50.2%, respectively).

**Table 14.4: Risk factor profile of patients (aged 18 years and over)**

<b>Number of risk factors</b>	<b>Number</b>	<b>Per cent BEACH sample (95%CI) (n = 30,002)</b>	<b>Per cent in patient population (95% CI)<sup>(a)</sup></b>
<b>No risk factors</b>	<b>7,821</b>	<b>26.1 (25.3–26.9)</b>	<b>24.8 (23.9–25.6)</b>
<b>One risk factor</b>	<b>15,022</b>	<b>50.1 (49.4–50.8)</b>	<b>48.2 (47.5–48.9)</b>
Overweight only	6,779	22.6 (22.0–23.2)	20.9 (20.3–21.6)
Obese only	4,808	16.0 (15.4–16.6)	14.8 (14.2–15.4)
At-risk alcohol level only	2,308	7.7 (7.2–8.2)	8.3 (7.7–8.8)
Current daily smoker only	1,127	3.8 (3.5–4.0)	4.2 (3.9–4.5)
<b>Two risk factors</b>	<b>5,935</b>	<b>19.8 (19.1–20.4)</b>	<b>21.9 (21.2–22.7)</b>
Overweight and at-risk alcohol level	2,131	7.1 (6.7–7.5)	7.7 (7.2–8.1)
Obese and at-risk alcohol level	1,225	4.1 (3.8–4.3)	4.3 (4.1–4.6)
Daily smoker and at-risk alcohol level	982	3.3 (3.0–3.5)	4.0 (3.7–4.3)
Overweight and current daily smoker	931	3.1 (2.9–3.4)	3.5 (3.2–3.8)
Obese and current daily smoker	666	2.2 (2.0–2.4)	2.4 (2.2–2.7)

(continued)

**Table 14.4 (continued): Risk factor profile of patients (aged 18 years and over)**

Number of risk factors	Number	Per cent BEACH sample (95%CI) (n = 30,002)	Per cent in patient population (95% CI) <sup>(a)</sup>
<b>Three risk factors</b>	<b>1,224</b>	<b>4.1</b> <b>(3.8–4.4)</b>	<b>5.1</b> <b>(4.7–5.4)</b>
Overweight and current daily smoker and at-risk alcohol level	775	2.6 (2.4–2.8)	3.3 (3.0–3.5)
Obese and current daily smoker and at-risk alcohol level	449	1.5 (1.3–1.7)	1.8 (1.6–2.0)

(a) Estimation of the risk factor profile of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once)  $n = 14$  million.

Note: CI—confidence interval.

**Table 14.5: Number of risk factors, by patient sex**

Number of risk factors	Number	Per cent in BEACH sample within sex (95% CI)	Per cent in patient population within sex (95% CI) <sup>(a)</sup>
<b>Male patients</b>	<b>11,784</b>	<b>100.0</b>	—
No risk factors	2,378	20.2 (19.2–21.1)	18.8 (17.8–19.8)
One risk factor	5,657	48.0 (47.0–49.0)	45.8 (44.7–46.9)
Two risk factors	3,051	25.9 (24.9–26.9)	28.2 (27.1–29.3)
Three risk factors	698	5.9 (5.4–6.4)	7.2 (6.6–7.8)
<b>Female patients</b>	<b>18,218</b>	<b>100.0</b>	—
No risk factors	5,443	29.9 (28.9–30.8)	29.8 (28.8–30.9)
One risk factor	9,365	51.4 (50.6–52.3)	50.2 (49.4–51.1)
Two risk factors	2,884	15.8 (15.2–16.5)	16.7 (16.0–17.4)
Three risk factors	526	2.9 (2.6–3.2)	3.3 (3.0–3.6)

(a) Estimation of the risk factor profile of the total adult general practice patient population (that is, patients aged 18 years and over who have attended a GP at least once)  $n = 14$  million.

Note: CI—confidence interval.