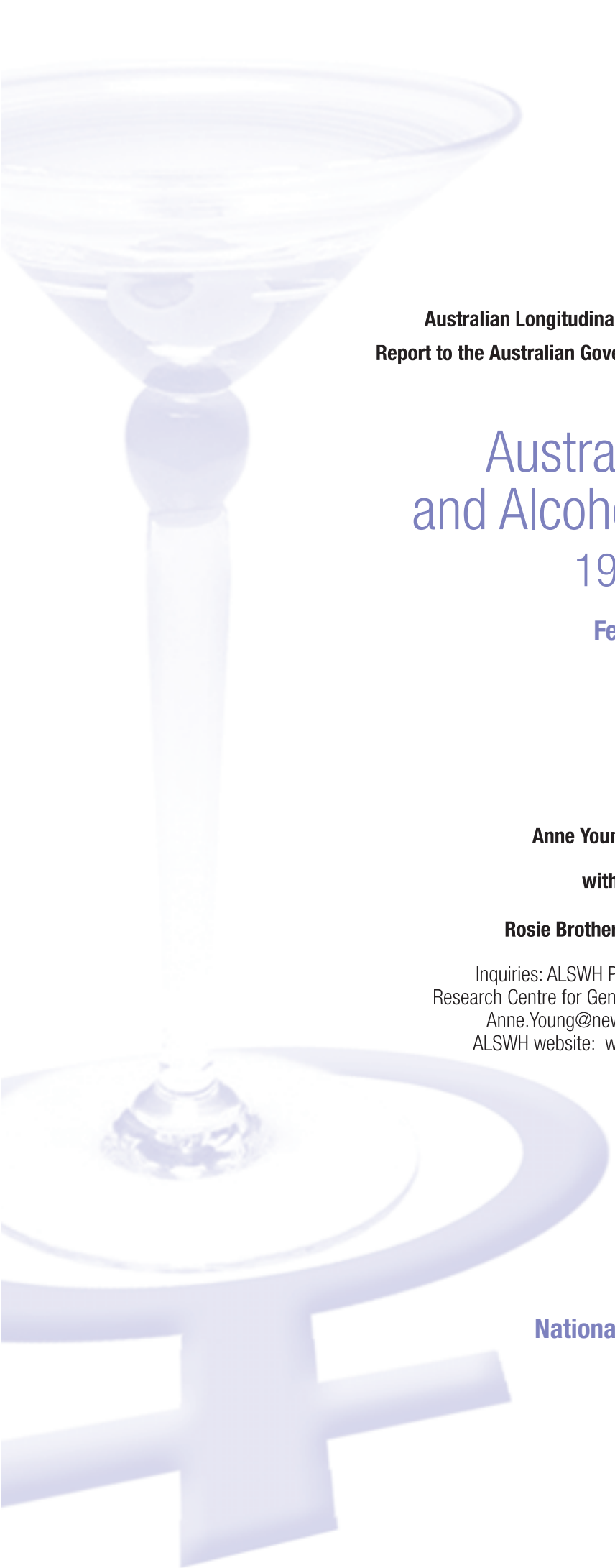

**Australian Longitudinal Study on Women's Health (ALSWH)**

**Report to the Australian Government Department of Health and Ageing**

# Australian Women and Alcohol Consumption 1996-2003

**February 2005**


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**National Alcohol Strategy**

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# Executive Summary

The Australian Longitudinal Study on Women's Health (ALSWH) provides a unique opportunity to monitor changes over time in the health and well-being of a large, nationally representative sample of Australian women, their social circumstances, and their health behaviour, including alcohol consumption. This report presents results for women in three age cohorts (Younger, Mid-age and Older) from 1996 to 2003 and provides important data on alcohol consumption among Australian women.

A clear majority of respondents to the surveys are non-drinkers or drink at low levels of long-term risk, although some of these women reported short-term risk drinking (having five or more drinks on one occasion).

### Findings related to long-term risk drinking:

**Among Younger women aged 18-23 years** (n=14,247):

- 5% were risky or high risk drinkers;
- 52% were low risk drinkers;
- 34% rarely drank; and
- 9% were non-drinkers.

**Among Mid-age women aged 45-50 years** (n=13,716):

- 5% were risky or high risk drinkers;
- 50% were low risk drinkers;
- 31% rarely drank; and
- 15% were non-drinkers.

**Among Older women aged 70-75 years** (n=12,432):

- 3% were risky or high risk drinkers;
- 34% were low risk drinkers;
- 29% rarely drank; and
- 34% were non-drinkers.

### Findings related to short-term risk drinking (having five or more drinks on one occasion):

**Younger women:**

- 18% did this often (once a week or more);
- 21% did this sometimes (about once a month);

- 32% did this rarely (less than monthly); and
- 29% never had five or more drinks on one occasion.

**Mid-age women:**

- 6% did this often (once a week or more);
- 8% did this sometimes (about once a month);
- 19% did this rarely (less than monthly); and
- 67% never had five or more drinks on one occasion.

**Older women:**

- 2% did this often (once a week or more);
- 2% did this sometimes (about once a month);
- 5% did this rarely (less than monthly); and
- 91% never had five or more drinks on one occasion.

**Other findings include:**

- Although Older women are more likely to be non-drinkers than Younger or Mid-age women, more than 10% of the Older women report drinking alcohol every day;
- the majority of Mid-age and Older women consumed 1 or 2 drinks on a day when they drink;
- Younger and Mid-age women report similar levels of long-term risk drinking;
- Mid-age women tend to drink alcohol on more days of the week than Younger women but have fewer drinks;
- Younger women were more likely to consume three or more drinks in one day than Mid-age or Older women; and
- at Survey 1, 7% of the Younger women usually consumed 9 or more drinks on a day when they were drinking.

### Findings on the longitudinal changes in alcohol consumption between Surveys include:

- The majority of women did not change their level of alcohol consumption over 5-7 years between surveys;
- most women who reported consuming alcohol at all surveys were doing so at low levels of long-term risk;
- more than a quarter of the Older women remained non-drinkers over the six-year period from 1996 to 2002; and
- Younger women were more likely than Mid-age or Older women to decrease their alcohol consumption from levels that were risky to their health.

**The associations between alcohol consumption at levels of long-term risk and socio-demographic characteristics, health status and health service use of women of different ages were explored. In summary:**

Women who consume alcohol at levels that are not harmful to their health (low risk) are more likely than other women to:

- live in urban areas;
- have higher education;
- manage on their income without difficulty;
- be in the healthy weight range;
- have moderate or high levels of physical activity;
- have been born in Australia or another English-speaking country; and
- have better self-rated physical health.

Non-drinkers and women who rarely drink are more likely than other women to:

- have a non-English speaking background;
- be non-smokers;
- have more consultations with general practitioners;
- take a greater number of prescription medications (Mid-age and Older women); and
- be currently pregnant or ever pregnant (Younger women).

Women who consume alcohol at levels that are risky or high risk are more likely than other women their age to:

- have poorer mental health and
- be current smokers;

and among Younger women to:

- be current users of multiple illicit drugs;
- have deliberately harmed themselves; and
- have had more male sexual partners.

**The associations between alcohol consumption at levels of short-term risk and health and socio-demographic characteristics among Younger women were explored. In summary:**

The findings for frequency of short-term risk drinking, by long-term risk drinking, are:

- 93% of risky drinkers participated in short-term risk drinking at least weekly.
- One third of low risk drinkers participated in short-term risk drinking about once a month and 24% did so at least weekly.

**Factors associated with short-term risk drinking among Younger women were explored. In summary, short-term risk drinking occurred more often among:**

- Australian-born women and those of English-speaking background;
- separated, divorced and widowed young women;
- women who had difficulty managing on available income;
- current smokers;
- women who were not or have never been pregnant;
- women who reported deliberately harming themselves;
- current users of illicit drugs; and
- women who had had more male sexual partners.

**Factors associated with change in alcohol consumption over time were explored. In summary:**

For women in all three age groups, the most consistent and largest associations over time were between smoking and drinking habits. Women who smoked had consistently higher odds of remaining risky drinkers or changing from low risk to risky drinking.

Changes in marital status were associated with changes in alcohol consumption:

- Younger women who became married or formed de facto relationships between Survey 1 and Survey 2 had decreased odds of continuing to drink at risky levels or of becoming risky drinkers.
- Older women who were widowed by Survey 2 had decreased odds of remaining risky drinkers.
- Although Mid-age women without partners had decreased odds of remaining risky drinkers, those in de facto relationships had increased odds of remaining risky drinkers or changing their drinking habits.

Changes in health were also associated with changes in alcohol consumption in Mid-age women:

- Mid-age women whose mental health had deteriorated by Survey 2 had higher odds of beginning to drink at levels of risk, whereas those whose mental health had improved had higher odds of changing from risky to low risk drinkers, or of remaining risky drinkers.

Other findings for Younger women were:

- Those who were mothers at both Survey 1 and Survey 2 had lower odds of remaining risky drinkers.
- Those who had become new mothers by Survey 2 had lower odds of becoming risky drinkers or remaining risky drinkers.

**The long-term effects of alcohol consumption on women's health were investigated. In summary:**

The association between alcohol consumption and withdrawing from the study or dying was investigated in each age group with adjustment for area of residence, education, smoking and comorbidity. The main results were:

- Younger women who were non-drinkers were more likely to withdraw from the study than low risk drinkers.
- Mid-age women who were non-drinkers or rarely drank had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers or rarely drank had a significantly higher risk of dying during the survey period than low risk drinkers.

The association between alcohol consumption and health-related quality of life was investigated in each age group with adjustment for area of residence, education, smoking, BMI and comorbidity. The main results were:

Alcohol consumption among the Younger women over the seven-year period was significantly associated with three health outcomes.

- Compared with low risk drinkers, non-drinkers had poorer physical functioning and lower physical health summary scores.
- Compared with low risk drinkers, women who remained risky drinkers had poorer mental health.

Alcohol consumption was associated with many aspects of health for the Mid-age women over the five-year period.

- Being a non-drinker or rarely drinking was associated with a reduction in all dimensions of physical health.
- Being a risky drinker, compared with a low risk drinker, was associated with poorer mental health and general health.

A strong relationship was found between alcohol consumption and health-related quality of life among the Older women.

- Compared with being a low risk drinker, Older women who were non-drinkers also had significantly poorer health on the physical health summary measure and the eight dimensions of physical and mental health.
- The findings for Older women who rarely drink were similar but not as strong with lower scores on the physical health summary measure and five of the eight dimensions.

Further information on alcohol consumption and women's health will be available as more data are collected in the longitudinal study. Survey 4 of the Mid-age group was conducted in 2004, Survey 4 of the Older women will begin in March 2005 and Survey 4 of the Younger cohort will take place in 2006.

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# Section 1 Background

## 1.1 Overview of previous research on women and alcohol

### Alcohol consumption and health

The harmful effects on health of heavy alcohol consumption have been well documented. 'Drinking alcohol at risky and high risk levels for long-term harm was estimated to have caused 3,290 deaths in Australia in 1997, accounting for about 4 percent of all male deaths and 2 percent of all female deaths, and about 50,000 hospitalisations [Chikritzhs *et al.* 2001].' (National Health & Medical Research Council, 2001: 32). Heavy drinking, sporadically and long term, increases the risk of chronic disease, including heart attack and liver cirrhosis, along with an increased risk of injury to the drinker or others through, for example, road traffic accidents (Dobson, Brown, Ball, Powers, & McFadden, 1999: 525; Mathers *et al.*, 2001: 110; National Health & Medical Research Council, 2001). In addition, 'the risk of a number of types of cancer rises with increasing level of consumption of alcoholic beverages. However, the risks vary considerably depending on types of cancer'. (Chapman, 2003: 37).

The risk of alcohol-related mortality and morbidity, in general, increases with high levels of alcohol consumption, including periods of heavy drinking. Consequently, investigation into drinking patterns and predictors of risky drinking is necessary.

The possible benefits of low to moderate alcohol consumption, as opposed to the negative health, social and economic implications of heavy alcohol consumption, are not as well understood. 'There is growing evidence that regular intake of alcohol protects against cardiovascular disease, but that alcohol consumption at all levels above abstinence increases the risk of various other diseases and injuries [Roche 1997]'. (Mathers, Vos, Stevenson, & Begg, 2001: 107). Mathers *et al.* found that approximately half of the disease burden and injury caused by alcohol consumption (4.9% of total) was countered by beneficial effects of alcohol consumption (which averted 2.8% of the total disease burden) (2001: 107).

A NSW study of 11,511 cases of acute myocardial infarction or coronary death and 6077 controls 'shows that moderate regular consumption of alcohol over

five or six days a week is associated with a reduction in risk of a major coronary event' (McElduff & Dobson, 1997: 1162). Along with having advantages for coronary heart disease, drinking alcohol regularly at low or moderate levels has also been found to reduce the risk of stroke, hypertension, gallstones and diabetes mellitus, as well as increasing life-expectancy (Mathers *et al.*, 2001: 109; Rehm *et al.*, 2003).

## Alcohol and women's health

Research into the health risks and benefits of alcohol consumption is of particular consequence to women. Women are more susceptible to the effects of alcohol consumption than men because of their physiological differences. In general, women have a smaller body mass, a higher proportion of body fat and smaller livers than men. So women's bodies have less chance to dilute, absorb and disperse the alcohol they consume (National Health & Medical Research Council, 2001: 45).

This can be exacerbated by 'the culture of thinness and dieting that particularly affects young women, [and]… places them at increased risk of the effects of alcohol. Dieting leads to a disproportionate loss of body fluid, so that a given quantity of alcohol in a person who is dieting leads to a higher concentration of alcohol within the body' (National Health & Medical Research Council, 2001: 45). Body mass is also an issue for older women who drink, as the volume of water in the body decreases with age. Moreover the increased number of medications that older people often take can lead to a 'reduced neurological tolerance for alcohol' (National Health & Medical Research Council, 2001: 49). Therefore, the risks associated with drinking alcohol, such as liver cirrhosis, alcohol dependence, risky driving behaviour and cancer, occur at lower levels of consumption for women than they do for men (Australian Government Department of Health and Ageing, June 2003).

Breast cancer, the commonest form of cancer among Australian women, is particularly affected by alcohol, and is a major public health issue. The Cancer Council NSW suggest that**,** 'women who are at high risk of breast cancer and low risk of heart disease may benefit from stopping even light or moderate alcohol consumption' (Chapman, 2003: 37).

Further health risks exist for women in the form of the association that alcohol has with both weight-gain (see Ball, Brown, & Crawford, 2002) and depression. 'A relationship has also been found between alcohol use and adverse mental health problems commonly experienced by women, such as depression, eating disorders and lower self-esteem [Copeland *et al.*, 1993]' (Fleming, 1996: 1326; see also Bell & Lee, 2003: 349; Brown, Ball & Powers, 1998).

Alcohol consumption has social implications for women as well. For women in particular, researchers have suggested that there is a correlation between marital problems and higher alcohol consumption (National Health & Medical Research Council, 2001: 42). In addition, Miller and Downs (1993) found that 'women with alcohol problems experienced significantly higher levels of

violence by partners' (1993: 141), than women without alcohol dependence (see also Australian Institute of Health and Welfare, 2002). The relationship between alcohol and violence is clearly of particular concern.

Alcohol consumption by women also affects the safety of the foetus during pregnancy. 'The evidence indicates that episodes of drinking above the guideline levels considerably increase the risk to the unborn child, including the risk of miscarriage, low birth weight, cognitive defects and congenital abnormalities. Heavy bouts of drinking maximise that risk' (National Health & Medical Research Council, 2001: 16). The fact that these risks exist from the moment of conception onwards, when a woman may not know she is pregnant, increases the threat to the foetus. Once born, children are still at risk from their mother's consumption of alcohol, as alcohol in the bloodstream also passes into breast milk (National Health & Medical Research Council, 2001).

Mathers *et al.* (2001) found that the number of women drinking at risky levels had escalated in recent years, thus further compounding the health risks associated with alcohol consumption. 'Women are particularly vulnerable to the adverse health consequences of alcohol, with alcohol-dependent women experiencing higher mortality than alcohol dependent men [Hill, 1983]' (Fleming, 1996: 1326). Consequently, research on women and alcohol is of vital importance.

## The need for longitudinal data on women and alcohol consumption in Australia

Analysis of data from the Australian Longitudinal Study on Women's Health (ALSWH) can contribute to information on women and alcohol in Australia. The longitudinal design of the ALSWH project permits the analysis of alcohol consumption over time for three different age groups of women. Other recent studies of women and alcohol tend only to provide either cross-sectional data or longitudinal data at two time-points (Dent, Grayson, Waite, Cullen, *et al.*, 2000; Droomers, Schrijvers, & Mackenbach, 2004). Consequently, little is known about changes in women's alcohol consumption over time.

In addition, the majority of existing research on the use of alcohol by women is either based on populations outside Australia (Casswell, Pledger, & Pratap, 2002; Gronboek *et al.*, 2004; Thun, Peto, Lopez, & Monaco, 1997), or on specific geographic, ethnic, or age groups in the Australian population (Broe, Creasey, Jorm, Bennett, *et al.*, 1998; Dent *et al.*, 2000). For example, Crook *et al.* (1998) investigated heavy drinking in eight regions of Queensland.

Therefore, the ALSWH sample is important both in terms of size (40,000 participants) and composition, being a national representation of women living in Australia. When participants were originally invited to take part in the project, women living in rural and remote areas were over-sampled, and this allows geographic comparisons in alcohol consumption across Australia (Brown, Young, & Byles, 1997). The structure of the sample is also noteworthy in that the three age cohorts provide the opportunity of assessing

and comparing alcohol consumption both across and at specific stages of the life span. Other Australian research on women and alcohol, has focused on one age group only, such as the Sydney Older Persons Study which investigated the effect of alcohol consumption on cognitive impairment in a sample of over-75 year olds (Broe *et al.*, 1998).

It is necessary to explore alcohol consumption in different age groups, as it has been suggested that women's alcohol consumption patterns change over the life span, in relation both to age and to transitions of social roles and environments, such as marriage, motherhood, and living arrangements. 'Because many elements of a woman's life, such as her upbringing or career, occur at different points in her life, some may be risk factors for developing problem drinking only at certain periods during the life cycle' (Gomberg, 1994). For example, in a Netherlands study of 1327 men and women aged 16-69 years, Hajema and Knibbe (1998) found that while both gaining a spouse and having a child decreased alcohol consumption, losing a spouse increased consumption. Furthermore, analysis of the ALSWH data has shown that risky drinking was 'most common amongst women who lived in shared accommodation, and least common amongst those living with a partner and child(ren)' (Brown, Ball, & Powers, 1998: 22).

Interestingly, 'the harmful affects of alcohol are distributed relatively evenly across all age groups, whereas almost all the benefits from alcohol are found in ages over 45 and particularly in older people. This suggests that different public health advice may be appropriate for younger and older people. Moderate alcohol use is beneficial at middle and older ages, while excessive alcohol use is harmful at all ages' (Mathers *et al.*, 2001: 109-110; see also Gomberg (1994), and Jonas *et al.* (2000)).

In a recent report funded by the Australian Government Department of Health and Ageing, gaps and priorities and potential opportunities for further research of alcohol consumption in Australia are discussed. (Australian Institute of Health and Welfare, 2004) Some of the main points are:

- repetition of surveys is important and useful and should be considered a priority;
- information should be available to a wide range of people such as policy makers, health professionals and the public;
- data linkage could improve or greatly increase the benefits and usefulness of the data;
- specific population groups or priority populations that require special consideration include the elderly and people from rural and remote areas;
- few national collections include sufficient numbers of people from the priority groups and few regularly collect data; and
- there are limited national data on the relationship between alcohol use and mental health.

In response to these gaps and priorities, this report presents findings from a large nationally representative sample of women in three age groups, with

repeated surveys over eight years of follow-up, with measures of demographic, health and psychosocial variables, including mental health. The surveys use well validated questions on alcohol consumption. Risk of alcohol-related harm in the short term and long term are considered, as well as the health and social benefits of alcohol consumption. The study also has record linkage to Medicare and National Death Index data.

## 1.2 Aims of this report

This report has been prepared on the basis of discussions between the research team and staff of the Alcohol Substance Misuse & Injury Prevention Section of the Department of Health and Ageing. Initial discussions, held in February 2004, addressed policy needs and their match with existing data. On this basis, specific topics were selected for this report.

Using data from the Australian Longitudinal Study on Women's Health for the period 1996-2003, the following research questions will be investigated:

- Who drinks how much, and do women's drinking patterns change over time?
- What are the characteristics of women with different drinking patterns?
- What predicts becoming a more or less risky drinker over time?
- What long-term effects does alcohol consumption have on women's health?

## 1.3 The Australian Longitudinal Study on Women's Health

The Australian Longitudinal Study on Women's Health (ALSWH)—widely known as Women's Health Australia—is a longitudinal population-based survey, funded by the Australian Department of Health and Ageing. The project began in 1996 and examines the health of over 40,000 Australian women.

The ALSWH involves three large, nationally representative, cohorts of Australian women representing three generations:

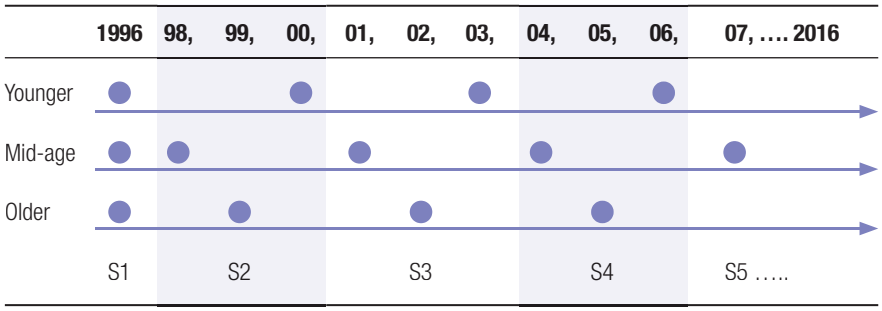
- The Younger women, aged 18-23 when first recruited in 1996 (n=14,247), are now in their late 20s, the peak years for relationship formation, childbearing, and establishing adult health habits (e.g. physical activity, diet) and paid and unpaid work patterns.
- The Mid-age women, initially aged 45-50 (n=13,716), are now experiencing menopause, as well as changes in household structure, family care-giving, and impending retirement, which are common at this life stage. Some are showing early signs of age-related physical decline, while some are adopting new health behaviour in preparation for a healthy old age.

- The Older women, aged 70-75 when first recruited (n=12,432), are in their 80s and facing the physical, emotional and social challenges of old age.

Features of the study design include:

- Women were randomly selected from the Medicare database and invited to participate in the longitudinal study.
- Women in rural and remote areas of Australia were intentionally over-sampled to ensure adequate numbers for statistical analysis.
- Since Survey 1 in 1996, the three age cohorts have been surveyed sequentially, one cohort per year, on a rolling basis since 1998 (see Figure 1.1).

**Figure 1.1 Timeline for main ALSWH Surveys**




The study was designed to explore factors that influence health among women who are broadly representative of the entire Australian population. The study assesses:

- physical and emotional health (including well-being, major diagnoses, symptoms);
- use of health services (GP, specialist and other visits, access, satisfaction);
- health behaviour and risk factors (diet, exercise, smoking, alcohol, other drugs);
- time use (including paid and unpaid work, family roles, and leisure);
- socio-demographic factors (location, education, employment, family composition); and
- life stages and key events (such as childbirth, divorce, widowhood).

The project provides a valuable opportunity to examine associations over time between aspects of women's lives and their physical and emotional health. It provides an evidence base to the Australian Department of Health and Ageing—as well as other Australian and State/Territory Departments—for the development and evaluation of policy and practice in many areas of service delivery that affect women. An overview of the study and investigators, copies of the questionnaires, and abstracts of all publications and presentations can be located on the Study's website http://www.newcastle.edu.au/centre/wha.

The project has been able to retain a very high proportion of the original participants. Among the Younger women, 68% responded to Survey 2 in 2000 and 64% to Survey 3 in 2003, retention rates which compare well with other surveys of this highly mobile age group. Retention rates have been much higher

among the Mid-age women: 90% and 83% of Mid-age women respectively responded to Survey 2 in 1998 and Survey 3 in 2001. Of the Older women, 88% responded to Survey 2 in 1999 and 79% to Survey 3 in 2002.

Alcohol consumption data are available for the Younger cohort at Survey 1 (1996), Survey 2 (2000) and Survey 3 (2003), for the Mid-age cohort Survey 1(1996) and Survey 2 (1998) and for the Older cohort Survey 1(1996), Survey 2 (1999) and Survey 3 (2002). The Mid-age Survey 3 was conducted in 2001, but data on alcohol were only collected using a non-comparable method (the Victoria Cancer Council's Food Frequency Questionnaire), which measures alcohol consumption with a different set of questions.

The notation used in this report for the nine surveys analysed in this report, the years the surveys were conducted and the ages of the women are shown in Table 1.1.

**Table 1.1 Notation for the surveys used in this report**

| Year | Younger | Mid-age | Older |
|---|---|---|---|
| 1996 | Y1<br>18-23 yrs | M1<br>45-50 yrs | O1<br>70-75 yrs |
| 1997 | | | |
| 1998 | | M2<br>47-52 yrs | |
| 1999 | | | O2<br>73-78 yrs |
| 2000 | Y2<br>22-27 yrs | | |
| 2001 | | M3*<br>50-55 yrs | |
| 2002 | | | O3<br>76-81 yrs |
| 2003 | Y3<br>25-30 yrs | | |

* Australian alcohol guidelines consumption categories not available

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# Section 2 The measurement of alcohol consumption

## 2.1 Introduction

The Australian alcohol guidelines developed by the National Health & Medical Research Council (NH&MRC) classify alcohol use in terms of level of risk: *low risk*, *risky* and *high risk* levels of drinking (National Health & Medical Research Council, 2001). *Low risk* describes a level of drinking at which there is only a minimal risk of harm and there may be health benefits. *Risky* levels are those at which the risk of harm is significantly increased beyond any possible benefits. *High risk* drinking levels are those where there is substantial risk of serious harm. Risk is also assessed in terms of *long-term* and *short-term* risk. *Long-term* risk is defined by the total amount of alcohol typically consumed per week. *Short-term* risk is associated with levels of drinking on a single day. The number of standard drinks for levels of drinking for adult women of average size is shown in Table 2.1.

**Table 2.1 Definition of levels of risk for alcohol consumption among women (standard drinks)**

| | Low risk | Risky | High risk |
|---|---|---|---|
| **Short-term risk** | Up to 4 on any one day, no more than 3 days per week | 5 to 6 on any one day | 7 or more on any one day |
| **Long-term risk** | Up to 2 per day<br>OR<br>Up to 14 per week | 3 to 4 per day<br>OR<br>15 to 28 per week | 5 or more per day<br>OR<br>29 or more per week |

## 2.2 How has alcohol use been measured by ALSWH?

Each survey for each cohort has included questions on the frequency and quantity of alcohol consumed by the respondents. A full description of the questions asked at each survey is shown in Appendix. The ALSWH has defined four categories of *long-term* risk, based on the Australian alcohol guidelines, and a fifth category of *non-drinkers* was added (Table 2.2).

The Australian alcohol guidelines' definitions for *risky* and *high risk* drinking are adopted in full. For women defined as *low risk* by the Australian alcohol guidelines, the ALSWH has defined two subgroups: those who *rarely drink* (those who report they drink only rarely, i.e. less than once per month) and the remainder of this group who are classified as *low risk*. From Section 4 onwards of this report, the categories of risky and high risk have been combined because of small numbers.

**Table 2.2 Categories of long-term risk for alcohol consumption in the Australian alcohol guidelines and ALSWH**

| Australian alcohol guidelines | ALSWH |
|---|---|
| | Non-drinker |
| Low risk | Rarely drink<br>Low risk |
| Risky | Risky |
| High risk | High risk |

*Short-term* risk is assessed by a question asking how often the respondent has five or more drinks on one occasion (see Appendix).

The ALSWH questions did not ask the women to assess their alcohol consumption in terms of standard drinks nor to report the type of alcohol product consumed. Hence, the raw number of drinks cannot be adjusted in order to convert it to number of standard drinks. At Survey 3 for the Mid-age group in 2001, as part of a food frequency questionnaire, women were asked questions about the number of days on which they drank beer, wine and/or spirits; the number of standard drinks they consumed on a day when they drank alcohol and the maximum number of glasses of beer, wine and/or spirits they consumed in a day. Wine was found to be the most common alcoholic beverage for women. As wine is consumed from glasses which usually range from 1 to 1.8 standard drinks, the prevalence of risky/high-risk drinking may be under-estimated. However the main aim of this report is to look at trends over time and a consistent, well-defined method of measuring alcohol consumption has been used.

## 2.3 Reference

National Health & Medical Research Council 2001. *Australian Alcohol Guidelines: Health Risks and Benefits*, Canberra, NH&MRC.

# Section 3 Who drinks how much, and do women's drinking patterns change over time?

## 3.1 Cross-sectional data

Tables 3.1 and 3.2 provide cross-sectional data on the frequency and quantity of alcohol consumed by Younger, Mid-age and Older women at Survey 1, Survey 2 and Survey 3. It should be noted that the surveys are sent out at the same time of year (around March/ April) each time.

**Table 3.1 Frequency of alcohol consumption**

| How often do you usually drink alcohol? | Younger | | | Mid-age** | | Older | | |
|---|---|---|---|---|---|---|---|---|
| | Y1 n=14,247 % | Y2 n=9689 % | Y3 n=9049 % | M1 n=13,716 % | M2 n=11,648 % | O1 n=12,432 % | O2 n=9514 % | O3 n=8646 % |
| Never | 9.3 | 8.8 | 7.7 | 14.7 | 12.7 | 33.8 | 34.5 | 37.5 |
| Rarely* | 33.5 | 27.5 | 25.7 | 30.5 | 27.8 | 28.9 | 27.1 | 24.1 |
| < once a week | 28.0 | 26.8 | 24.7 | 14.4 | 14.4 | 7.4 | 5.9 | 6.1 |
| 1 or 2 days a week | 24.1 | 25.2 | 24.9 | 15.3 | 16.3 | 8.1 | 7.8 | 7.4 |
| 3 or 4 days a week | 4.1 | 8.6 | 11.7 | 10.6 | 12.1 | 6.1 | 6.4 | 6.1 |
| 5 or 6 days a week | 0.7 | 2.2 | 4.1 | 7.2 | 8.5 | 4.4 | 5.3 | 5.3 |
| Every day | 0.2 | 0.9 | 1.3 | 7.3 | 8.2 | 11.3 | 13.1 | 13.5 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

* Response options changed for Survey 2 and Survey 3 for the Younger cohort. Instead of *rarely*, the option was *less than once a month.*

** Survey 3 data not comparable

Percentages of responses with missing alcohol data were <1% for the Younger and Mid-age cohorts and 3% to 4% in the Older cohort.

Older women are more likely to be non-drinkers than Younger or Mid-age women, although more than 10% report drinking alcohol every day. Mid-age and Younger women report similar frequency of rarely drinking, but the Mid-age women tend to drink alcohol on more days of the week than Younger women. However there is a trend for Younger women to drink alcohol on an increasing number of days of the week over the seven year period 1996-2003.

## Table 3.2 Quantity of alcohol consumed

| On a day when you drink alcohol, how many drinks do you usually have? | Younger | | | Mid-age* | | Older | | |
|---|---|---|---|---|---|---|---|---|
| | Y1 n=14,247 % | Y2 n=9689 % | Y3 n=9049 % | M1 n=13,716 % | M2 n=11,648 % | 01 n=12,432 % | 02 n=9514 % | 03 n=8646 % |
| Non-drinker | 9.4 | 8.8 | 7.7 | 15.0 | 13.1 | 35.2 | 41.9 | 43.3 |
| 1 or 2 | 31.1 | 43.0 | 51.8 | 65.6 | 69.0 | 58.1 | 52.6 | 52.7 |
| 3 or 4 | 29.5 | 29.4 | 27.8 | 16.4 | 15.2 | 6.1 | 5.2 | 3.8 |
| 5 to 8 | 22.8 | 15.3 | 10.9 | 2.5 | 2.4 | 0.5 | 0.3 | 0.3 |
| 9 or more | 7.3 | 3.6 | 1.8 | 0.5 | 0.3 | 0.1 | 0 | 0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

* Survey 3 data not comparable

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 2% to 4% for the Mid-age and 4% to 8% in the Older cohort.

The majority of Mid-age and Older women consumed one or two drinks on a day when they were drinking. Younger women were more likely to consume three or more drinks than Mid-age or Older women. At Survey 1, 7.3% of the Younger women usually consumed nine or more drinks on a day when drinking, but this had dropped to 1.8% when they were resurveyed seven years later at Survey 3. The percentage of Younger women drinking five to eight drinks in one day also decreased substantially from 22.8% in 1996 to 10.9% by 2003.

Table 3.3 provides cross-sectional data on the frequency of short-term risk alcohol consumption by Younger women at Surveys 1, 2 and 3, Mid-age women at Surveys 1 and 2, and Older women at Survey 1. The rates for Mid-age women did not change over the two-year period between surveys but there was a decrease in short-term risk drinking among Younger women.

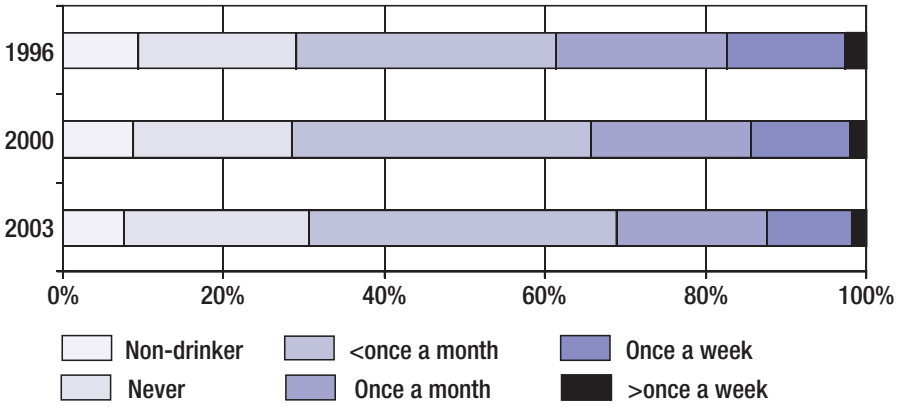
## Table 3.3 Frequency of short-term risk drinking (5 or more standard drinks on one occasion

| How often do you have five or more drinks of alcohol on one occasion? | Younger | | | Mid-age | | Older* |
|---|---|---|---|---|---|---|
| | Y1 n=14,247 % | Y2 n=9689 % | Y3 n=9049 % | M1 n=13,716 % | M2 n=11,648 % | 01 n=12,432 % |
| Non-drinker | 9.4 | 8.8 | 7.6 | 14.8 | 12.8 | 34.1 |
| Never | 19.8 | 19.8 | 23.1 | 52.4 | 54.6 | 56.5 |
| < once a month | 32.2 | 37.2 | 38.3 | 18.7 | 17.7 | 5.3 |
| Once a month | 21.3 | 19.9 | 18.7 | 7.8 | 8.7 | 2.4 |
| Once a week | 14.9 | 12.5 | 10.5 | 4.7 | 4.8 | 1.1 |
| > once a week | 2.5 | 1.9 | 1.8 | 1.6 | 1.5 | 0.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

* question about short-term risk drinking only included in Survey 1 for Older cohort

Percentages of responses with missing alcohol data were 1% to 2% for the Younger and the Mid-age and 5% for the Older cohort.

**Figure 3.1** Percentage of Younger women in each short-term risk category




Cross-sectional data are shown in Table 3.4 for the modified categories of alcohol consumption from the Australian alcohol guidelines (long-term risk; see Table 2.2) for the three cohorts. The majority of Younger women were drinking at low long-term risk; Mid-age women were most likely to drink at low long-term risk or drink rarely; most Older women were equally likely to be non-drinkers, to drink rarely or at low long-term risk.

**Table 3.4** Alcohol consumption based on Australian alcohol guidelines

| Alcohol consumption | Younger | | | Mid-age | | Older | | |
|---|---|---|---|---|---|---|---|---|
| | Y1 n=14,247 % | Y2 n=9689 % | Y3 n=9049 % | M1 n=13,716 % | M2 n=11,648 % | 01 n=12,432 % | 02 n=9514 % | 03 n=8646 % |
| Non-drinker | 9.3 | 8.8 | 7.7 | 14.7 | 12.8 | 33.8 | 34.0 | 37.3 |
| Rarely drinks | 33.6 | 27.6 | 25.8 | 30.6 | 27.9 | 28.9 | 26.7 | 23.9 |
| Low risk drinker | 52.0 | 59.9 | 62.9 | 49.5 | 53.6 | 33.9 | 35.3 | 35.8 |
| Risky drinker | 4.5 | 3.4 | 3.2 | 4.3 | 4.9 | 3.1 | 3.7 | 2.8 |
| High risk drinker | 0.6 | 0.3 | 0.5 | 0.9 | 0.8 | 0.3 | 0.3 | 0.2 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Note: the discrepancy between missing numbers in Tables 3.1, 3.2 and 3.3 is mainly due to women who rarely drink.
Percentages of responses with missing alcohol data were 1% for the Younger and the Mid-age and 2% to 4% for the Older cohort.

The data for Survey 1 are also shown graphically in Figure 3.2, in which the risky and high risk categories have been combined because of small numbers.

At Survey 3 in 2001, as part of a food frequency questionnaire, Mid-age women were asked about their alcohol consumption over the last year (Tables 3.5 and 3.6). The questions related to the number of days on which they drank beer, wine and/or spirits; the number of standard drinks they consumed on a day when they drank alcohol and the maximum number of glasses of beer, wine and/or spirits they consumed in a day.

The Mid-age women were more likely to drink white wine, red wine and spirits/liqueurs than beer or fortified wines (Table 3.5).

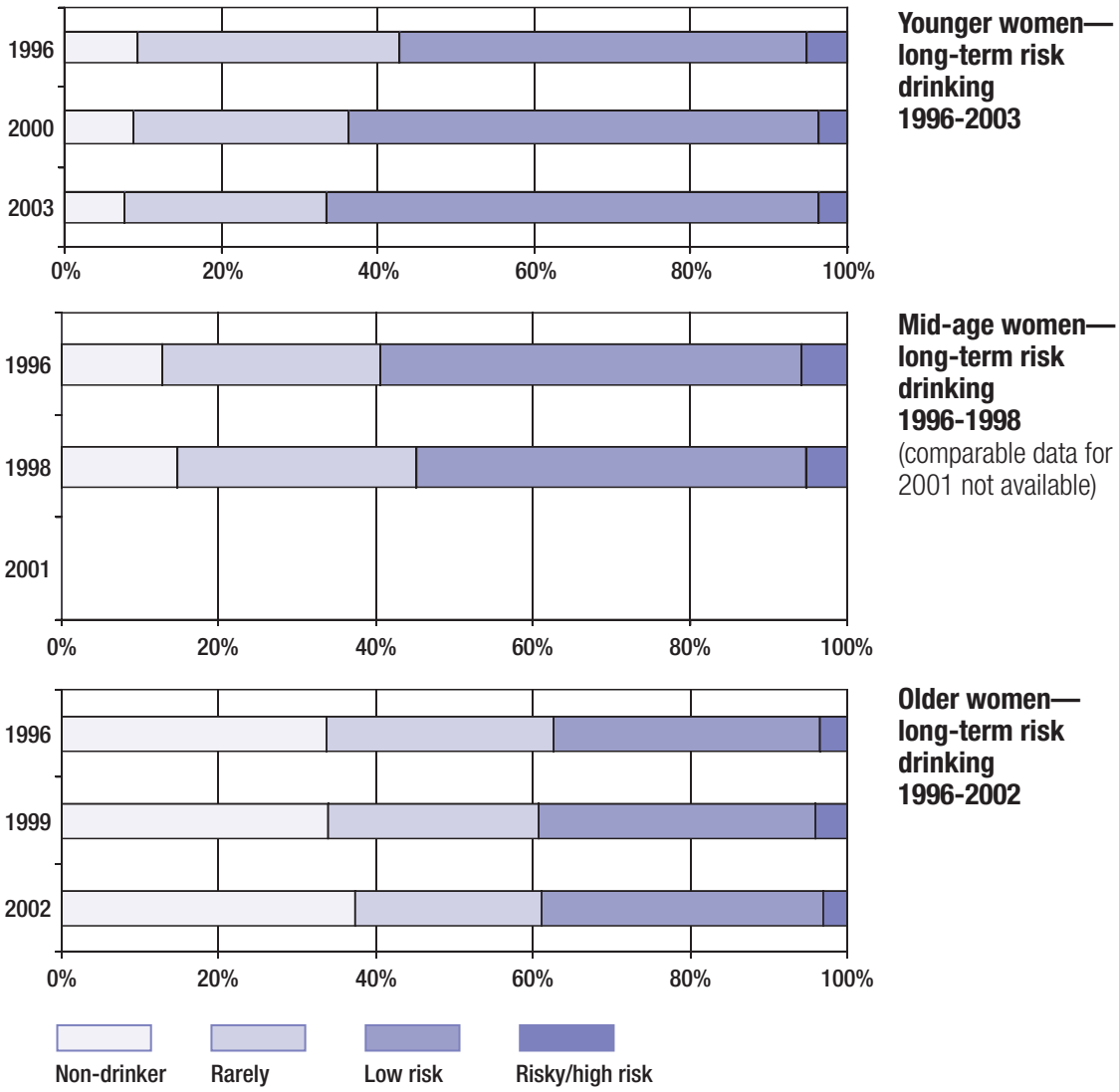
**Table 3.5 Frequency of consumption of beer, wine and/or spirits by 11,192 Mid-age women at Survey 3**

| | Beer (low alcohol) % | Beer (full strength) % | Red wine % | White wine % | Fortified wines, port, sherry % | Spirits, liqueurs % |
|---|---|---|---|---|---|---|
| Never | 67.7 | 78.6 | 43.7 | 27.3 | 63.9 | 48.0 |
| Rarely* | 18.6 | 13.9 | 18.7 | 21.7 | 25.9 | 27.7 |
| < once a week | 6.9 | 3.7 | 12.4 | 17.1 | 6.1 | 10.9 |
| 1 or 2 days a week | 4.1 | 2.2 | 12.2 | 15.6 | 2.5 | 7.9 |
| 3 or 4 days a week | 1.5 | 0.8 | 8.0 | 10.1 | 0.9 | 3.1 |
| 5 or 6 days a week | 0.6 | 0.4 | 2.7 | 4.6 | 0.4 | 1.3 |
| Every day | 0.6 | 0.5 | 2.3 | 3.6 | 0.3 | 1.1 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

* less than once a month

Percentages of responses with missing alcohol data were between 3% and 9%.

**Figure 3.2 Percentage of women in each long-term risk category, by year and age group**



Most Mid-age women at Survey 3 reported usually drinking one or two glasses of alcohol, although more than 20% reported having consumed five or more glasses in 24 hours at least once in the last year (Table 3.6).

**Table 3.6 Quantity of alcohol consumed usually and maximum number of glasses by 11,192 Mid-age women at Survey 3**

| Usual quantity | % |
|---|---|
| Non-drinker | 16.0 |
| 1 or 2 glasses per day | 60.3 |
| 3 or 4 glasses per day | 19.2 |
| 5 to 8 glasses per day | 4.0 |
| 9 or more glasses per day | 0.5 |
| Total | 100 |
| **Maximum quantity** | **%** |
| Non-drinker | 16.0 |
| 1 or 2 glasses per day | 32.6 |
| 3 or 4 glasses per day | 29.1 |
| 5 to 8 glasses per day | 19.2 |
| 9 or more glasses per day | 3.1 |
| Total | 100 |

Percentages of responses with missing alcohol data were 6.5% for usual quantity and 6.1% for maximum quantity.

## 3.2 Data for women who participated in all surveys

The following tables show the alcohol consumption at Survey 1 and 2 (and 3 for Younger and Older women) for those women who completed the surveys at each phase of the study. Women who died, withdrew from the study, failed to return follow-up surveys or were not contactable are excluded from the data in Tables 3.7 – 3.10.

There was little change in the cross-sectional pattern of alcohol consumption for Mid-age women. Younger women were drinking more frequently at Survey 2 and Survey 3 than at Survey 1 whereas there was a greater percentage of Older women not drinking alcohol at Survey 3 (Table 3.7).

**Table 3.7 Frequency of alcohol consumption among participants to all surveys**

| Usually drink alcohol | Younger (n=7790) | | | Mid-age (n=11,648) | | Older (n=7966) | | |
|---|---|---|---|---|---|---|---|---|
| | Y1 % | Y2 % | Y3 % | M1 % | M2 % | O1 % | O2 % | O3 % |
| Never | 8.5 | 8.8 | 7.7 | 14.1 | 12.7 | 30.8 | 32.7 | 37.1 |
| Rarely* | 33.4 | 27.5 | 25.9 | 29.9 | 27.8 | 28.8 | 27.3 | 24.0 |
| < once a week | 28.8 | 26.8 | 24.9 | 14.7 | 14.4 | 7.9 | 6.1 | 6.1 |
| 1 or 2 days a week | 24.1 | 25.2 | 24.6 | 15.6 | 16.3 | 8.4 | 7.9 | 7.3 |
| 3 or 4 days a week | 4.2 | 8.6 | 11.4 | 10.8 | 12.1 | 6.6 | 6.6 | 6.3 |
| 5 or 6 days a week | 0.8 | 2.2 | 4.1 | 7.5 | 8.5 | 4.9 | 5.7 | 5.4 |
| Every day | 0.3 | 0.9 | 1.3 | 7.6 | 8.2 | 12.6 | 13.8 | 13.9 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

* response options were changed for Surveys 2 and 3 for the Younger cohort. Instead of *rarely*, the option was *less than once a month*.

Percentages of responses with missing alcohol data were <1% for the Younger and Mid-age cohorts and 2% to 4% for the Older cohort.

Younger women were likely to drink fewer drinks per day at Surveys 2 and 3 than at Survey 1. The quantity of alcohol consumed per day remained about the same for Mid-age women between Survey 1 and Survey 2 and the Older women were less likely to be drinking alcohol at Survey 3 than Survey 1 or Survey 2 (Table 3.8).

**Table 3.8 Quantity of alcohol consumed among participants in all surveys**

| Drinks per day | Younger (n=7790) | | | Mid-age (n=11,648) | | | Older (n=7966) | |
|---|---|---|---|---|---|---|---|---|
| | Y1 % | Y2 % | Y3 % | M1 % | M2 % | 01 % | 02 % | 03 % |
| Non-drinker | 8.6 | 8.7 | 7.8 | 14.3 | 13.1 | 31.9 | 40.0 | 42.9 |
| 1 or 2 | 32.6 | 43.0 | 52.7 | 66.9 | 69.0 | 61.2 | 54.2 | 53.1 |
| 3 or 4 | 30.1 | 29.4 | 27.5 | 16.2 | 15.2 | 6.3 | 5.5 | 3.7 |
| 5 to 8 | 21.8 | 15.3 | 10.4 | 2.3 | 2.4 | 0.5 | 0.3 | 0.3 |
| 9 or more | 6.9 | 3.6 | 1.6 | 0.4 | 0.3 | 0.1 | 0.0 | 0.0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 2% to 4% for the Mid-age and 4% to 7% for the Older cohorts.

Short-term risk drinking among the Younger women declined from Survey 1 to Survey 3. There was little change in short-term risk drinking among the Mid-age women between Survey 1 and Survey 2 (Table 3.9).

**Table 3.9 Frequency of short-term risk drinking (5 or more standard drinks on one occasion) among participants in all surveys**

| Short-term risk drinking | Younger (n=7790) | | | Mid-age (n=11,648) | | Older (n=7966) |
|---|---|---|---|---|---|---|
| | Y1 % | Y2 % | Y3 % | M1 % | M2 % | 01 % |
| Non-drinker | 8.5 | 8.7 | 7.7 | 14.2 | 12.8 | 31.1 |
| Never | 20.4 | 19.8 | 23.8 | 53.4 | 54.6 | 59.4 |
| < once a month | 33.2 | 37.2 | 38.5 | 18.9 | 17.7 | 5.5 |
| Once a month | 21.2 | 19.9 | 18.4 | 7.6 | 8.7 | 2.4 |
| Once a week | 14.3 | 12.5 | 9.8 | 4.5 | 4.8 | 1.0 |
| > once a week | 2.4 | 1.9 | 1.8 | 1.4 | 1.5 | 0.6 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 1% for the Mid-age and 4% for the Older cohorts.

Younger women who participated in all surveys reported decreased alcohol consumption over the seven year period between their first and third surveys. There was little change in long-term risk drinking among Mid-age women. Older women by Survey 3 were more likely to be non-drinkers and less likely to drink rarely than in previous years (Table 3.10).

Although the data in Tables 3.7 to 3.10 show trends in the consumption of alcohol over time in each age group for the same group of women (longitudinal data), these tables do not show the movement between categories (transitions) for the women. These transitions are shown in the next section.

**Table 3.10 Alcohol consumption based on Australian alcohol guidelines among participants in all surveys**

| Alcohol consumption | Younger (n=7790) | | | Mid-age (n=11,648) | | Older (n=7966) | | |
|---|---|---|---|---|---|---|---|---|
| | Y1 % | Y2 % | Y3 % | M1 % | M2 % | O1 % | O2 % | O3 % |
| Non-drinker | 8.2 | 8.3 | 7.7 | 14.1 | 12.8 | 30.8 | 32.3 | 36.9 |
| Rarely drinks | 33.1 | 27.5 | 25.9 | 29.9 | 27.9 | 28.8 | 26.9 | 23.8 |
| Low risk drinker | 53.8 | 60.9 | 62.9 | 50.9 | 53.6 | 36.8 | 36.7 | 36.3 |
| Risky drinker | 4.2 | 3.1 | 3.0 | 4.3 | 4.9 | 3.3 | 3.9 | 2.8 |
| High risk drinker | 0.6 | 0.2 | 0.5 | 0.8 | 0.8 | 0.3 | 0.3 | 0.2 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Percentages of responses with missing alcohol data were 1% or less for the Younger and Mid-age cohorts and 2% to 3% for the Older cohort.

## 3.3 Longitudinal data for women who participated in all surveys

The following tables show changes over time in alcohol consumption from Survey 1 to Survey 2 for participants of all ages, and changes between Surveys 1, 2 and 3 for Younger and Older participants. Mid-age and Older women were the least likely to change their alcohol consumption over time (Table 3.11). The Younger women were more likely to change, with 17% decreasing their consumption and only 3% increasing their consumption to risky or high risk levels.

**Table 3.11 Changes over time in alcohol consumption from Survey 1 to Survey 2**

| Changes in alcohol consumption | Younger (n=9689) % | Mid-age (n=11,648) % | Older (n=9514) % |
|---|---|---|---|
| **No change** | | | |
| Remained non-drinker | 4.5 | 10.3 | 27.7 |
| Remained rarely drinks | 14.9 | 20.1 | 17.1 |
| Remained low risk drinker | 40.6 | 44.3 | 27.7 |
| Remained risky or high risk drinker | 1.0 | 3.7 | 2.5 |
| **Sub-total no change** | **61.0** | **78.4** | **75.0** |
| **Decreased consumption** | | | |
| Rarely drinks to non-drinker | 3.1 | 1.9 | 4.5 |
| Low risk to non-drinker/ rarely drinks | 10.2 | 4.6 | 6.6 |
| Risky or high risk to non-drinker/ rarely | 1.0 | 0.1 | 0.2 |
| Risky or high risk to low risk drinker | 3.1 | 1.3 | 0.9 |
| **Sub-total decreased consumption** | **17.4** | **7.9** | **12.2** |
| **Increased consumption** | | | |
| Non-drinker to rarely/ low risk drinker | 3.9 | 3.7 | 4.6 |
| Rarely drinks to low risk drinker | 15.0 | 8.0 | 6.8 |
| Non-drinker/ rarely/ low risk drinker to risky or high risk drinker | 2.7 | 2.0 | 1.5 |
| **Sub-total increased consumption** | **21.6** | **13.7** | **12.9** |
| **Total** | **100** | **100** | **100** |

Percentages of responses with missing alcohol data were 2% for the Younger and Mid-age cohorts and 6% for the Older cohort.

The women who reported never drinking at all surveys will be categorised as 'perpetual non-drinkers'. The most common transitions are between low risk drinker, rarely drinks and non-drinker. In Tables 3.12 to 3.14, these data are summarised so that ***low risk*** refers to women who reported drinking alcohol at least rarely at one survey (not perpetual non-drinkers) but did not drink at levels that were 'risky' or 'high risk' at any survey (risky).

As seen in Table 3.12, the majority of women did not change their alcohol consumption category between Survey 1 and Survey 2. Most women consuming alcohol remained in the 'low risk' combined category at both times and more than a quarter of the Older women remained non- drinkers. Younger women were more likely than Mid-age or Older women to change from drinking at risky levels to low risk, perhaps in connection with other life events such as becoming pregnant. These factors will be explored in Section 6.

**Table 3.12 Summary of changes over time in alcohol consumption from Survey 1 to Survey 2**

| | Younger (n=9689) % | Mid-age (n=11,648) % | Older (n=9514) % |
|---|---|---|---|
| Perpetual non-drinker | 4.5 | 10.3 | 27.7 |
| Remain low risk | 87.8 | 82.6 | 67.2 |
| Risky/high risk to low risk | 4.1 | 1.4 | 1.0 |
| Low risk to risky/high risk | 2.7 | 2.0 | 1.5 |
| Remain risky/high risk | 1.0 | 3.7 | 2.5 |
| Total | 100 | 100 | 100 |

Percentages of responses with missing alcohol data were 2% for the Younger and Mid-age cohorts and 6% for the Older cohort.

Very few of the Younger women (0.2%) had been drinking at risky levels at all three surveys and only 1.8% had been drinking at risky levels at two of the three surveys (Table 3.13).

**Table 3.13 Summary of changes in alcohol consumption among Younger women from Survey 1 (1996) to Survey 3 (2003), (n=7790)**

| Alcohol consumption over time | % |
|---|---|
| Perpetual non-drinker | 3.3 |
| Remain low risk | 87.4 |
| Low risk at two surveys, risky/high risk at one | 7.3 |
| Low risk at one survey, risky/high risk at two | 1.8 |
| Remain risky/high risk | 0.2 |
| Total | 100 |

Alcohol transition data were missing for 2% of Younger women.

Most Older women remained non-drinkers or continued to drink rarely or at low risk (Table 3.14).

**Table 3.14 Summary of changes in alcohol consumption among Older women from Survey 1 (1996) to Survey 3 (2002), (n=8397)**

| Alcohol consumption over time | % |
|---|---|
| Perpetual non-drinker | 25.2 |
| Remain not risky | 69.0 |
| Not risky at two surveys, risky/high risk at one | 2.3 |
| Not risky at one survey, risky/high risk at two | 1.8 |
| Remain risky/high risk | 1.7 |
| Total | 100 |

Alcohol transition data were missing for 12% of Older women.

The associations between socio-demographic characteristics, health status and health service use and alcohol consumption among women in each cohort will be examined in the next section of this report.

## 3.4 Summary

A clear majority of respondents to the surveys are non-drinkers or drink at low levels of long-term risk, although some of these women reported short-term risk drinking (having five or more drinks on one occasion).

In summary, the findings related to long-term risk drinking at Survey 1 for all respondents are:

Among Younger women aged 18-23 years (n=14,247):

- 5% were risky or high risk drinkers;
- 52% were low risk drinkers;
- 34% rarely drank; and
- 9% were non-drinkers.

Among Mid-age women aged 45-50 years (n=13,716):

- 5% were risky or high risk drinkers;
- 50% were low risk drinkers;
- 31% rarely drank; and
- 15% were non-drinkers.

Among Older women aged 70-75 years (n=12,432):

- 3% were risky or high risk drinkers;
- 34% were low risk drinkers;
- 29% rarely drank; and
- 34% were non-drinkers.

In summary, the findings related to short-term-risk drinking (having five or more drinks on one occasion) at Survey 1 are:

Younger women:

- 18% did this often (once a week or more)
- 21% did this sometimes (about once a month)
- 32% did this rarely (less than monthly) and
- 29% never had five or more drinks on one occasion.

Mid-age women:

- 6% did this often (once a week or more)
- 8% did this sometimes (about once a month)
- 19% did this rarely (less than monthly) and
- 67% never had five or more drinks on one occasion.

Older women:

- 2% did this often (once a week or more)
- 2% did this sometimes (about once a month)
- 5% did this rarely (less than monthly) and
- 91% never had five or more drinks on one occasion.

Other findings include:

- Although Older women are more likely to be non-drinkers than Younger or Mid-age women, more than 10% of the Older women report drinking alcohol every day.
- The majority of Mid-age and Older women consumed one or two drinks on a day when they drink.
- Younger and Mid-age women report similar levels of long-term risk drinking.
- Mid-age women tend to drink alcohol on more days of the week than Younger women but have fewer drinks.
- Younger women were more likely to consume three or more drinks in one day than Mid-age or Older women.
- At Survey 1, 7% of the Younger women usually consumed nine or more drinks on a day when they were drinking.

In summary, the findings on the longitudinal changes in alcohol consumption between Surveys include:

- The majority of women did not change their level of alcohol consumption over 5-7 years between surveys.
- Most women who reported consuming alcohol at all surveys were doing so at low levels of long-term risk.
- More than a quarter of the Older women remained non-drinkers over the six-year period from 1996 to 2002.
- Younger women were more likely than Mid-age or Older women to decrease their alcohol consumption from levels that were risky to their health.

# Section 4 What are the characteristics of women with various levels of alcohol consumption?

## 4.1 Methods

As in the previous section, the two categories from the Australian alcohol guidelines called 'risky' and 'high risk' alcohol consumption have been combined, because of the relatively small number of women in these categories. The category 'Low Risk' has been separated into two subgroups: those who rarely drink and the remainder of the low risk group (see Table 2.2).

Groups of women, defined according to their alcohol consumption, were compared within each age group separately. The characteristics which were compared included area of residence, self-reported socio-demographic variables, measures of health, and measures of health service use.

The Short-Form 36 (SF-36) Quality of Life questionnaire covers the major aspects of health and has been validated with adults of all ages (Ware and Sherbourne, 1992; McCallum, 1994). The SF-36 produces an eight-dimension measure of health status and quality of life. The dimensions are: general health perceptions (GH), physical function (PF), bodily pain (BP), the effect of physical health on role performance (RP), the effect of emotional health on role performance (RE), general mental health (MH), social functioning (SF), and vitality (VT). Each dimension is measured on a scale of 0-100, with higher scores representing better health.

Factor analysis of the correlations among the eight dimensions of the SF-36 has identified two summary measures relating to physical health and mental health. The dimensions labelled general health (GH), physical function (PF), bodily pain (BP) and role physical (RP) load more strongly on the physical health component and the remaining four dimensions load more strongly on the mental health component. The summary scores were computed and standardised (using the ALSWH population) to produce the 'physical health component summary score' (PCS) and the 'mental health component summary score' (MCS). The PCS and MCS scores have a mean of 50 and standard deviation of 10 (Mishra & Schofield, 1998).

An important consideration is whether or not differences in SF-36 scores represent a clinically significant decrease or increase in physical and mental

health. Normative data from the 1995 National Health Survey show that the presence of one serious physical condition (e.g. cancer, heart disease, diabetes, hypertension, asthma, arthritis) results in decreases of PCS and MCS of 3.3 and 2.1 respectively. The decrease in mean dimension scores for people with one serious physical condition were: PF 6.2, RP 9.0, BP 8.9, GH 8.2, VT 6.4, SF 5.6, RE 5.7, MH 4.2. (ABS- Australian Bureau of Statistics, 1997. National Health Survey Australia, 1995: SF-36 Population Norms, Canberra, Australia.)

## 4.2 Results

### 4.2.1 Younger women

The area of residence of the 14,247 Younger women aged 18-23 years at Survey 1 is shown in Table 4.1, by their levels of alcohol consumption.

Area of residence was significantly associated with alcohol consumption ($p<.001$). The percentage of young women drinking at risk was higher in rural and remote areas of Australia. Percentages in all subsequent tables are weighted to take account of over-sampling in rural and remote areas.

**Table 4.1 Area of residence of Younger women by alcohol consumption, Survey 1 (n=14,247)**

| | Non-drinker (n=1253) | Rarely drinks (n=4853) | Low risk drinker (n=7192) | Risky or high risk drinker (n=782) | Total |
|---|---|---|---|---|---|
| Urban n=7778 | 9.8 | 32.6 | 53.1 | 4.5 | 100 |
| Rural n=5755 | 7.8 | 37.2 | 48.6 | 6.4 | 100 |
| Remote n=547 | 7.3 | 32.2 | 49.0 | 11.5 | 100 |

Table 4.2 shows the socio-demographic characteristics of Younger women, by their consumption of alcohol. The findings for Younger women are that:

- There was little difference in the pattern of alcohol consumption by age, for women aged between 18 and 24 years.
- The pattern of drinking was the same for Australian-born women and those of English-speaking background (ESB). Non-ESB women were more likely to be non-drinkers (36% versus 7%) and overall drank less than ESB women.
- Separated, divorced and widowed young women were most likely to drink at risky levels (9%) and married women were least likely to drink at risky levels (2%).
- Drinking at low risk levels increased in prevalence with increasing education, from 39% of those with school certificate to 63% of those with a university degree.
- Women who had less difficulty managing on their income were more likely to be low risk drinkers.
- There was no clear association between being rushed and busy in this age group and alcohol consumption (although there was a statistically significant effect, it was small and inconsistent).

**Table 4.2 Socio-demographic characteristics of Younger women by alcohol consumption, Survey 1 (n=14,247)**

| | N | Non-drinker (n=1253) | Rarely drinks (n=4853) | Low risk drinker (n=7192) | Risky/high risk drinker (n=782) | p-value |
|---|---|---|---|---|---|---|
| **Age in years** | | | | | | |
| 18 | 814 | 8.8 | 31.1 | 54.0 | 6.1 | .051 |
| 19 | 2945 | 9.8 | 32.5 | 51.6 | 6.2 | |
| 20 | 2920 | 8.4 | 34.8 | 51.9 | 4.9 | |
| 21 | 2719 | 9.5 | 33.1 | 52.7 | 4.7 | |
| 22 | 2751 | 9.0 | 35.0 | 51.6 | 4.4 | |
| 23 | 1984 | 10.4 | 33.2 | 51.4 | 5.0 | |
| **Country of birth** | | | | | | |
| Australia | 12,926 | 7.5 | 33.1 | 54.0 | 5.4 | <.001 |
| Other English speaking background | 542 | 7.2 | 33.7 | 53.5 | 5.6 | |
| Other | 664 | 36.0 | 39.3 | 23.7 | 1.0 | |
| **Marital status** | | | | | | |
| Never married | 10,850 | 8.7 | 30.9 | 54.9 | 5.5 | <.001 |
| Married | 1265 | 19.2 | 42.4 | 36.2 | 2.2 | |
| De facto | 1928 | 5.9 | 45.0 | 44.7 | 4.5 | |
| Separated/divorced/widowed | 134 | 17.2 | 39.3 | 34.9 | 8.6 | |
| **Highest qualification** | | | | | | |
| School certificate or less | 2427 | 13.3 | 40.7 | 39.0 | 7.0 | <.001 |
| Higher school certificate | 7600 | 8.8 | 32.8 | 53.4 | 5.0 | |
| Trade/diploma | 2563 | 8.7 | 35.1 | 51.2 | 5.0 | |
| University degree | 1576 | 7.3 | 26.3 | 63.2 | 3.2 | |
| **Manage on income** | | | | | | |
| Impossible/difficult all the time | 2624 | 8.6 | 35.6 | 48.8 | 7.0 | <.001 |
| Difficult some of the time | 4706 | 8.4 | 34.1 | 51.8 | 5.8 | |
| Not too bad | 5070 | 9.7 | 32.2 | 54.0 | 4.1 | |
| Easy | 1795 | 11.1 | 33.1 | 52.0 | 3.8 | |
| **Feel rushed/too busy** | | | | | | |
| Never/monthly | 2254 | 11.5 | 32.9 | 50.6 | 5.0 | <.001 |
| Weekly | 2838 | 8.2 | 33.6 | 52.9 | 5.3 | |
| Few times weekly | 5853 | 8.4 | 33.1 | 53.7 | 4.8 | |
| Every day | 2378 | 9.7 | 35.3 | 50.0 | 5.5 | |

Table 4.3 shows the health status of Younger women, by their consumption of alcohol. The findings for Younger women are that:

- Self-rated physical health of low-risk drinkers was significantly better than that of women who drank at all other levels.

- Self-rated mental health of women drinking at risky levels was significantly worse than that of women who drank at all other levels.
- Smokers were more likely to drink at risky levels (9% to 12%) than non-smokers (2%). More non-smokers than smokers were non-drinkers (14% vs 4%).
- Young women who had moderate or high levels of physical activity were more likely to drink at low risk (53% to 55%) than those who were sedentary or had low levels of physical activity (49%).
- Young women who were in the acceptable range for Body Mass Index (BMI) were most likely to drink at low risk (55%), while those who were obese tended to be non-drinkers or rarely drink and were least likely to drink at low risk (41%).
- Women who were currently pregnant were more likely to be non-drinkers or rarely drink, although 3% reported drinking alcohol at risky levels.
- Women who had ever been pregnant were also more likely to be non-drinkers or rarely drink than women who had not been pregnant.

**Table 4.3 Health status of Younger women by alcohol consumption, Survey 1 (n=14,247).**

| | N | Non-drinker (n=1253) | Rarely drinks (n=4853) | Low risk drinker (n=7192) | Risky/ high risk drinker (n=782) | p-value |
|---|---|---|---|---|---|---|
| **SF-36 mean (95% confidence interval)** | | | | | | |
| Physical health summary score | 13,807 | 48.9 (48.3; 49.4) | 49.4 (49.2; 49.7) | 50.8 (50.6; 51.1) | 49.3 (48.5; 50.0) | <.001 |
| Mental health summary score | 13,807 | 51.5 (50.9; 52.0) | 49.9 (49.6; 50.2) | 50.1 (49.9; 50.3) | 47.8 (47.1; 48.6) | <.001 |
| **Smoking status** | | | | | | |
| Never smoked | 7123 | 14.0 | 37.9 | 45.9 | 2.2 | <.001 |
| Ex-smoker | 2085 | 6.6 | 34.5 | 53.8 | 5.0 | |
| Smoke <20 cigs per day | 2356 | 3.9 | 25.3 | 61.6 | 9.2 | |
| Smoke ≥20 cigs per day | 1712 | 3.6 | 29.0 | 55.5 | 11.9 | |
| **Physical activity** | | | | | | |
| None or low | 6220 | 10.1 | 35.7 | 49.6 | 4.6 | <.001 |
| Moderate | 3646 | 8.5 | 31.1 | 55.0 | 5.4 | |
| High | 4287 | 8.8 | 32.3 | 53.3 | 5.6 | |
| **Body mass index*** | | | | | | |
| Underweight | 3306 | 11.4 | 33.7 | 51.4 | 3.5 | <.001 |
| Acceptable | 6471 | 8.3 | 31.5 | 55.0 | 5.1 | |
| Overweight | 1969 | 8.5 | 35.6 | 49.7 | 6.2 | |
| Obese | 840 | 11.7 | 42.0 | 41.0 | 5.3 | |
| **Currently pregnant** | | | | | | |
| Yes | 419 | 24.1 | 48.6 | 24.2 | 3.0 | <.001 |
| No | 13,467 | 8.9 | 33.1 | 52.9 | 5.1 | |
| Don't know | 232 | 10.2 | 36.3 | 44.3 | 9.2 | |
| **Ever pregnant** | | | | | | |
| Yes | 2647 | 12.1 | 41.8 | 40.4 | 5.8 | <.001 |
| No | 11,441 | 8.7 | 32.0 | 54.4 | 4.9 | |

* BMI not included for pregnant women

Table 4.4 shows the health service use of Younger women, by their consumption of alcohol. The findings for Younger women are that:

- Women who had seven or more visits to a general practitioner in the last year were more likely to be non-drinkers or rarely drink (possibly related to pregnancy).
- Women taking three or more prescription medications were more likely to drink at risky levels (7%) compared with those taking none or one medication (5%).
- Women not taking non-prescription medications were more likely to be non-drinkers (12%) or to rarely drink (37%), compared with those taking three or more non-prescription medications (9% and 28%, respectively).

**Table 4.4 Health service use of Younger women by alcohol consumption, Survey 1 (n=14,247)**

| | N | Non-drinker (n=1253) | Rarely drinks (n=4853) | Low risk drinker (n=7192) | Risky/high risk drinker (n=782) | p-value |
|---|---|---|---|---|---|---|
| **General practitioner visits in last year** | | | | | | |
| 0-2 | 5369 | 11.2 | 32.5 | 52.1 | 4.2 | <.001 |
| 3-4 | 3967 | 7.4 | 32.8 | 54.6 | 5.2 | |
| 5-6 | 2478 | 7.1 | 32.5 | 54.3 | 6.1 | |
| 7 or more | 2372 | 10.7 | 38.5 | 45.0 | 5.9 | |
| **Prescription medications in last four weeks** | | | | | | |
| None | 6054 | 11.3 | 34.8 | 49.1 | 4.8 | <.001 |
| 1 | 4906 | 7.1 | 32.4 | 55.7 | 4.8 | |
| 2 | 2001 | 8.3 | 31.8 | 54.2 | 5.7 | |
| 3 or more | 1242 | 10.3 | 35.2 | 47.9 | 6.6 | |
| **Non-prescription medications in last four weeks** | | | | | | |
| None | 5654 | 11.9 | 36.5 | 46.4 | 5.2 | <.001 |
| 1 | 4757 | 7.9 | 33.9 | 54.0 | 4.2 | |
| 2 | 2351 | 6.9 | 30.0 | 57.1 | 6.0 | |
| 3 or more | 1445 | 8.5 | 27.7 | 57.6 | 6.2 | |

Table 4.5 shows the health risk taking behaviour of Younger women, by their consumption of alcohol, at Survey 2. These more sensitive questions were not asked at Survey 1. The findings for Younger women are that:

- Women who reported deliberately harming themselves in the past six months were more likely to report drinking alcohol at risky or high risk levels.
- Illicit drug use was related to alcohol consumption, with current users of multiple drugs the most likely to be high risk or risky drinkers (9%), followed by current users of cannabis only (6%). Only 1% of women who had never used illicit drugs were drinking alcohol at long-term risky or high risk levels.
- Long-term risk drinking was associated with a higher reported number of male sexual partners.
- Women who had had none or one male sexual partner were more likely to be non-drinkers or rarely drink.

**Table 4.5 Health risk behaviours of Younger women by alcohol consumption, Survey 2 (n=9689)**

| | N | Non-drinker (n=871) | Rarely drinks (n=2789) | Low risk drinker (n=5601) | Risky/ high risk drinker (n=363) | p-value |
|---|---|---|---|---|---|---|
| **Deliberate self harm in last six months** | | | | | | |
| Yes | 347 | 6.2 | 27.7 | 57.0 | 9.1 | <.001 |
| No | 9232 | 8.8 | 27.6 | 60.2 | 3.5 | |
| **Use of illicit drugs** | | | | | | |
| Never used | 4141 | 14.8 | 34.7 | 49.2 | 1.3 | <.001 |
| Cannabis only, not in last year | 2237 | 5.3 | 28.5 | 63.7 | 2.6 | |
| Cannabis only, in last year | 943 | 3.1 | 18.1 | 73.0 | 5.7 | |
| Multiple, not in last year | 657 | 5.8 | 25.5 | 64.4 | 4.3 | |
| Multiple, in last year | 1540 | 3.0 | 15.3 | 72.4 | 9.3 | |
| **Number of male sexual partners** | | | | | | |
| None | 720 | 21.7 | 34.8 | 42.8 | 0.7 | <.001 |
| One | 2014 | 13.0 | 33.9 | 51.9 | 1.2 | |
| Two | 1056 | 8.5 | 28.6 | 60.7 | 2.2 | |
| Three or more | 4680 | 4.3 | 23.5 | 66.8 | 5.4 | |
| Don't want to answer | 1022 | 10.9 | 26.7 | 57.8 | 4.5 | |

## 4.2.2 Mid-age women

The area of residence of the 13,716 Mid-age women aged 45-50 years at Survey 1 is shown in Table 4.6, by their levels of alcohol consumption.

**Table 4.6 Area of residence of Mid-age women by alcohol consumption, Survey 1 (n=13,716)**

| | Non-drinker (n=2063) | Rarely drinks (n=4268) | Low risk drinker (n=6532) | Risky or high risk drinker (n=716) | Total |
|---|---|---|---|---|---|
| Urban (n=4937) | 14.4 | 29.8 | 50.6 | 5.2 | 100 |
| Rural (n=7724) | 15.6 | 32.7 | 46.6 | 5.1 | 100 |
| Remote (n=918) | 15.7 | 29.1 | 47.9 | 7.3 | 100 |

Area of residence was significantly associated with alcohol consumption (p<.001). The percentage of Mid-age women drinking at low risk was higher in urban areas of Australia and a slightly higher percentage of women in remote areas were drinking at higher levels of risk. Percentages in all subsequent tables are weighted to take account of over-sampling in rural and remote areas.

Table 4.7 shows the socio-demographic characteristics of Mid-aged women, by their consumption of alcohol. The findings for Mid-age women are that:

- There was no trend in the level of drinking with increasing age for women aged between 45 and 50 years (although age was significantly associated with level of drinking).
- The pattern of drinking was similar for Australian born women and those of English-speaking background (ESB), with 5% to 6% drinking at risk

and 51% to 57% being low risk drinkers. Non-ESB women were more likely to be non-drinkers (28% versus 11 to 13%) and overall drank less than ESB women.

- Women living in de facto relationships were more likely to drink at risky levels (12%) than married women (5%).
- Low risk drinking increased in prevalence with increasing education, from 35% of those with no formal qualifications to 61% of those with a university degree.
- Women who had less difficulty managing on their income were more likely to be low risk drinkers.
- There was no clear association between being rushed and busy in this age group and alcohol consumption (although the effect was statistically significant). Women who were busy were more likely to drink alcohol, but at low levels of risk.

**Table 4.7 Socio-demographic characteristics of Mid-age women by alcohol consumption, Survey 1 (n=13,716)**

| | N | Non-drinker (n=2063) | Rarely drinks (n=4268) | Low risk drinker (n=6532) | Risky/high risk drinker (n=716) | p-value |
|---|---|---|---|---|---|---|
| **Age in years** | | | | | | |
| 45 | 692 | 14.0 | 34.6 | 44.4 | 7.0 | <.001 |
| 46 | 2874 | 13.8 | 31.3 | 49.7 | 5.2 | |
| 47 | 2821 | 14.2 | 28.2 | 51.4 | 6.2 | |
| 48 | 2631 | 16.3 | 30.2 | 49.4 | 4.1 | |
| 49 | 2636 | 13.2 | 32.6 | 49.4 | 4.8 | |
| 50 | 2042 | 17.1 | 29.2 | 48.2 | 5.5 | |
| **Country of birth** | | | | | | |
| Australia | 10,306 | 13.1 | 30.1 | 51.1 | 5.7 | <.001 |
| Other English speaking background | 1820 | 10.5 | 27.1 | 57.5 | 4.9 | |
| Other | 1416 | 28.0 | 36.1 | 32.7 | 3.2 | |
| **Marital status** | | | | | | |
| Married | 10,516 | 15.1 | 30.9 | 49.3 | 4.7 | <.001 |
| De facto | 795 | 9.3 | 24.0 | 54.7 | 12.0 | |
| Separated/divorced/ widowed | 1891 | 14.9 | 30.9 | 49.2 | 5.0 | |
| Never married | 446 | 15.5 | 29.4 | 48.3 | 6.8 | |
| **Highest qualification** | | | | | | |
| No formal | 2483 | 20.3 | 40.4 | 34.5 | 4.8 | <.001 |
| School certificate | 4317 | 14.3 | 32.1 | 48.5 | 5.1 | |
| Higher school certificate | 2287 | 15.2 | 30.1 | 49.6 | 5.0 | |
| Trade diploma | 2599 | 12.9 | 28.4 | 53.9 | 4.9 | |
| University degree | 1892 | 11.5 | 21.0 | 61.4 | 6.1 | |
| **Manage on income** | | | | | | |
| Impossible/difficult all the time | 2030 | 17.6 | 35.5 | 40.1 | 6.9 | <.001 |
| Difficult some of the time | 3922 | 15.3 | 34.7 | 45.5 | 4.6 | |
| Not too bad | 5643 | 14.3 | 29.0 | 51.8 | 4.8 | |
| Easy | 2035 | 12.3 | 22.7 | 59.2 | 5.8 | |
| **Feel rushed/too busy** | | | | | | |
| Never/monthly | 2854 | 18.0 | 33.0 | 43.6 | 5.4 | <.001 |
| Weekly | 2409 | 13.8 | 26.7 | 54.0 | 5.5 | |
| Few times weekly | 5374 | 13.6 | 31.0 | 50.6 | 4.7 | |
| Every day | 2831 | 14.4 | 30.1 | 49.7 | 5.8 | |

Table 4.8 shows the health status of Mid-age women, by their consumption of alcohol. The findings for Mid-age women are that:

- Self-rated physical health of low-risk and risky drinkers was significantly better than that of women who were non-drinkers and those who rarely drank.
- Self-rated mental health of women drinking at risky levels was significantly worse than non-drinkers and women who drank at all other levels.
- Smokers were more likely to drink at risky levels (6% to 15%) than non-smokers (2%).
- Mid-age women who had moderate or high levels of physical activity were more likely to drink at low risk (52%) than those who were sedentary or had low levels of physical activity (48%).
- Mid-age women who were in the acceptable range for Body Mass Index (BMI) were most likely to drink at low risk (56%) while those who were obese tended to be non-drinkers or rarely drink and were least likely to drink at low risk (38%).

**Table 4.8 Health status of Mid-age women by alcohol consumption, Survey 1 (n=13,716)**

| | N | Non-drinker (n=2063) | Rarely drinks (n=4268) | Low risk drinker (n=6532) | Risky/high risk drinker (n=716) | p-value |
|---|---|---|---|---|---|---|
| **SF-36 mean (95% confidence interval)** | | | | | | |
| Physical health summary score | 12,768 | 47.5 (47.1; 48.0) | 49.0 (48.7; 49.3) | 51.4 (51.1; 51.6) | 51.1 (50.4; 51.9) | <.001 |
| Mental health summary score | 12,768 | 49.9 (49.5; 50.4) | 49.7 (49.4; 50.0) | 50.7 (50.5; 51.0) | 48.1 (47.4; 48.9) | <.001 |
| **Smoking status** | | | | | | |
| Never smoked | 7050 | 20.0 | 31.5 | 46.2 | 2.4 | <.001 |
| Ex-smoker | 3774 | 7.5 | 26.8 | 58.7 | 7.0 | |
| Smoke <20 cigs per day | 981 | 10.1 | 31.2 | 52.5 | 6.2 | |
| Smoke ≥20 cigs per day | 1401 | 13.5 | 33.3 | 38.7 | 14.6 | |
| **Physical activity** | | | | | | |
| None or low | 7918 | 14.9 | 32.4 | 47.6 | 5.1 | <.001 |
| Moderate | 3464 | 13.7 | 28.5 | 52.5 | 5.3 | |
| High | 2227 | 15.4 | 26.7 | 52.5 | 5.4 | |
| **Body mass index** | | | | | | |
| Underweight | 935 | 20.0 | 27.5 | 47.9 | 4.7 | <.001 |
| Acceptable | 5996 | 12.6 | 26.4 | 55.6 | 5.4 | |
| Overweight | 3655 | 14.6 | 32.0 | 47.8 | 5.6 | |
| Obese | 2369 | 17.8 | 39.7 | 38.1 | 4.5 | |

Table 4.9 shows the health service use of Mid-age women, by their consumption of alcohol. The findings for Mid-age women are that:

- Women who had had seven or more visits to a general practitioner in the last year were more likely to be non-drinkers or rarely drink.
- Women taking three or more prescription medications were more likely to be non-drinkers or rarely drink (58%) compared with those taking fewer medications (41% to 45%). However, 5% of women taking three or more prescription medications were combining this with high risk or risky alcohol consumption.
- Women not taking any non-prescription medications were more likely to be non-drinkers or to rarely drink (49%), compared with those taking three or more non-prescription medications (42% to 43%).

**Table 4.9 Health service use of Mid-age women by alcohol consumption, Survey 1 (n=13,716)**

| | N | Non-drinker (n=2063) | Rarely drinks (n=4268) | Low risk drinker (n=6532) | Risky/ high risk drinker (n=716) | p-value |
|---|---|---|---|---|---|---|
| General practitioner visits in last year | | | | | | |
| 0-2 | 6305 | 12.9 | 28.9 | 52.4 | 5.8 | <.001 |
| 3-4 | 3539 | 13.0 | 29.9 | 52.0 | 5.1 | |
| 5-6 | 1920 | 15.2 | 30.0 | 49.7 | 5.2 | |
| 7 or more | 1880 | 22.6 | 37.3 | 36.3 | 3.8 | |
| Prescription medications in last four weeks | | | | | | |
| None | 6367 | 13.6 | 30.4 | 51.0 | 4.9 | <.001 |
| 1 | 3450 | 13.0 | 28.2 | 52.8 | 6.0 | |
| 2 | 1953 | 16.1 | 29.1 | 49.4 | 5.4 | |
| 3 or more | 1777 | 20.9 | 36.7 | 37.8 | 4.6 | |
| Non-prescription medications in last four weeks | | | | | | |
| None | 5333 | 17.7 | 31.6 | 46.0 | 4.6 | <.001 |
| 1 | 4669 | 12.6 | 29.4 | 52.5 | 5.5 | |
| 2 | 1991 | 12.4 | 31.0 | 50.7 | 5.9 | |
| 3 or more | 1539 | 14.2 | 29.2 | 51.2 | 5.4 | |

### 4.2.3 Older women

The area of residence of the 12,432 Older women aged 70-75 years at Survey 1 is shown in Table 4.10, by their levels of alcohol consumption.

Area of residence was significantly associated with alcohol consumption (p<.001). The percentage of Older women drinking at low risk was higher in urban areas of Australia and a slightly higher percentage of women in remote areas were drinking at higher levels of risk, although many were non-drinkers. Percentages in all subsequent tables are weighted to take account of over-sampling in rural and remote areas.

**Table 4.10 Area of residence of Older women by alcohol consumption, Survey 1 (n=12,432)**

| | Non-drinker (n=4127) | Rarely drinks (n=3486) | Low risk drinker (n=3926) | Risky or high risk drinker (n=408) | Total |
|---|---|---|---|---|---|
| Urban (n=4868) | 33.0 | 28.6 | 34.9 | 3.5 | 100 |
| Rural (n=6803) | 35.5 | 29.5 | 31.7 | 3.3 | 100 |
| Remote (n=276) | 37.3 | 30.4 | 26.5 | 5.8 | 100 |

Table 4.11 shows the socio-demographic characteristics of Older women, by their consumption of alcohol. The findings for Older women are that:

- There were no differences in the pattern of drinking by age for women aged between 70 and 75 years.

- Women of non-English-speaking background (NESB) were more likely to be non-drinkers (45%) than Australian born women (34%) and other women of English-speaking background (ESB; 27%). Few Older women drank at risky levels; 4% of Australian born and ESB women, and 1% of NESB women.
- Married women were most likely to drink at low risk (36%) compared with widowed women (31%), separated and divorced women (32%) and never married women (32%).
- Low risk drinking increased in prevalence with increasing education, from 25% for those with no formal qualifications to 49% for those with a university degree.
- Women who had less difficulty managing on their income were more likely to be low risk drinkers.
- Older women who were very busy were more likely to be non-drinkers.

**Table 4.11 Socio-demographic characteristics of Older women by alcohol consumption, Survey 1 (n=12,432)**

| | N | Non-drinker (n=4127) | Rarely drinks (n=3486) | Low risk drinker (n=3926) | Risky/high risk drinker (n=408) | p-value |
|---|---|---|---|---|---|---|
| **Age in years** | | | | | | |
| 70 | 788 | 32.9 | 30.5 | 33.4 | 3.2 | 0.710 |
| 71 | 2737 | 33.8 | 28.7 | 34.5 | 3.0 | |
| 72 | 2762 | 33.4 | 27.9 | 35.1 | 3.6 | |
| 73 | 2408 | 34.1 | 29.3 | 32.7 | 3.9 | |
| 74 | 2202 | 33.1 | 29.1 | 34.2 | 3.6 | |
| 75 | 1524 | 35.5 | 29.5 | 32.0 | 3.0 | |
| **Country of birth** | | | | | | |
| Australia | 9000 | 33.5 | 28.3 | 34.5 | 3.7 | <.001 |
| Other English speaking background | 1468 | 26.9 | 29.3 | 39.9 | 3.9 | |
| Other | 1154 | 44.5 | 31.4 | 23.1 | 1.0 | |
| **Marital status** | | | | | | |
| Married/de facto | 6934 | 32.5 | 27.6 | 36.3 | 3.6 | <.001 |
| Widowed | 4224 | 35.7 | 30.5 | 30.6 | 3.2 | |
| Separated/divorced | 699 | 32.1 | 32.2 | 32.2 | 3.6 | |
| Never married | 351 | 36.3 | 27.9 | 31.8 | 4.0 | |
| **Highest qualification** | | | | | | |
| No formal | 4023 | 41.4 | 30.8 | 25.4 | 2.4 | <.001 |
| School certificate | 4532 | 32.1 | 28.3 | 35.6 | 4.0 | |
| Higher school certificate | 1471 | 26.8 | 28.6 | 40.6 | 4.0 | |
| Trade/diploma | 1311 | 29.3 | 27.6 | 40.3 | 2.8 | |
| University degree | 431 | 20.5 | 24.3 | 48.6 | 6.6 | |
| **Manage on income** | | | | | | |
| Impossible/difficult all the time | 817 | 39.5 | 29.1 | 27.9 | 3.5 | <.001 |
| Difficult some of the time | 2411 | 36.2 | 30.9 | 30.1 | 2.8 | |
| Not too bad | 6224 | 33.1 | 29.4 | 34.0 | 3.6 | |
| Easy | 2714 | 31.6 | 25.9 | 38.6 | 3.9 | |
| **Feel rushed/too busy** | | | | | | |
| Never/monthly | 7022 | 34.6 | 28.9 | 32.9 | 3.6 | <.001 |
| Weekly | 2440 | 32.8 | 27.2 | 37.1 | 2.9 | |
| Few times weekly | 2334 | 30.3 | 32.0 | 34.4 | 3.3 | |
| Every day | 436 | 42.1 | 23.5 | 29.5 | 4.9 | |

Table 4.12 shows the health status of Older women, by their consumption of alcohol. The findings for Older women are that:

- Self-rated physical and mental health of low-risk drinkers was significantly better than for women who were non-drinkers and those who rarely drank.
- Smokers were more likely to drink at risky levels (8% to 16%) than non-smokers (1% to 6%).
- Women who never smoked were more likely to be non-drinkers (41%) than smokers and ex-smokers (20% to 24%).
- Older women who had moderate or high levels of physical activity were more likely to drink at low risk (35% to 39%) than those who were sedentary or had low levels of physical activity (31%).
- Older women who were in the acceptable range for Body Mass Index (BMI) were most likely to drink at low risk (38%) while those who were obese tended to be non-drinkers or rarely drink, and were least likely to drink at low risk (24%).

**Table 4.12 Health status of Older women by alcohol consumption, Survey 1 (n=12,432)**

| | N | Non-drinker (n=4127) | Rarely drinks (n=3486) | Low risk drinker (n=3926) | Risky/ high risk drinker (n=408) | p-value |
|---|---|---|---|---|---|---|
| **SF-36 mean (95% confidence interval)** | | | | | | |
| Physical health summary score | 10,494 | 48.5 (48.2; 48.8) | 49.9 (49.6; 50.3) | 51.6 (51.3; 51.9) | 50.9 (49.9; 52.0) | <.001 |
| Mental health summary score | 10,494 | 49.7 (49.4; 50.1) | 50.3 (49.9; 50.6) | 50.9 (50.5; 51.2) | 50.4 (49.4; 51.4) | <.001 |
| **Smoking status** | | | | | | |
| Never smoked | 7243 | 41.1 | 29.0 | 28.4 | 1.5 | <.001 |
| Ex-smoker | 3458 | 20.2 | 28.9 | 45.0 | 6.0 | |
| Smoke <20 cigs per day | 530 | 23.6 | 24.3 | 44.3 | 7.8 | |
| Smoke ≥20 cigs per day | 343 | 20.7 | 30.9 | 32.5 | 15.9 | |
| **Physical activity** | | | | | | |
| None or low | 6959 | 35.6 | 29.4 | 31.4 | 3.7 | <.001 |
| Moderate | 3548 | 30.5 | 27.7 | 38.9 | 3.0 | |
| High | 1469 | 32.0 | 29.3 | 35.2 | 3.6 | |
| **Body mass index** | | | | | | |
| Underweight | 972 | 34.5 | 25.6 | 35.0 | 4.8 | <.001 |
| Acceptable weight | 5193 | 30.1 | 27.9 | 38.3 | 3.7 | |
| Overweight | 3789 | 33.9 | 30.3 | 32.4 | 3.4 | |
| Obese | 1604 | 42.5 | 31.6 | 24.2 | 1.8 | |

Table 4.13 shows the health service use of Older women, by their consumption of alcohol. The findings for Older women are that:

- Women who had had seven or more visits to a general practitioner in the last year were more likely to be non-drinkers (40%) than those who visited a general practitioner less often (30% to 32%).
- Women taking four or more prescription medications were more likely to be non-drinkers or rarely drink (67%), compared with those taking fewer

medications (59% to 63%). However 3% of the Older women taking four or more prescribed medications were drinking alcohol at levels of risk to their health.

- Women not taking any non-prescription medications were more likely to be non-drinkers or to rarely drink (65%) compared with those taking three or more non-prescription medications (60%).

**Table 4.13 Health service use of Older women by alcohol consumption, Survey 1 (n=12,432)**

| | N | Non-drinker (n=4127) | Rarely drinks (n=3486) | Low risk drinker (n=3926) | Risky/ high risk drinker (n=408) | p-value |
|---|---|---|---|---|---|---|
| **General practitioner visits in last year** | | | | | | |
| 0-2 | 2398 | 31.9 | 28.9 | 34.9 | 4.3 | <.001 |
| 3-4 | 3318 | 30.0 | 28.6 | 37.7 | 3.7 | |
| 5-6 | 2866 | 31.0 | 29.4 | 36.9 | 2.7 | |
| 7 or more | 3601 | 40.4 | 28.5 | 27.8 | 3.3 | |
| **Prescription medications in last four weeks** | | | | | | |
| None | 2142 | 29.9 | 29.4 | 37.2 | 3.5 | <.001 |
| 1 | 2329 | 31.0 | 29.8 | 35.8 | 3.4 | |
| 2 | 2427 | 32.8 | 30.1 | 33.5 | 3.6 | |
| 3 | 2004 | 32.7 | 27.1 | 36.8 | 3.4 | |
| 4 or more | 3435 | 39.0 | 28.4 | 29.2 | 3.4 | |
| **Non-prescription medications in last four weeks** | | | | | | |
| None | 7816 | 35.8 | 29.0 | 31.9 | 3.3 | <.001 |
| 1 | 2527 | 29.9 | 29.6 | 36.8 | 3.7 | |
| 2 | 1069 | 28.4 | 27.6 | 39.4 | 4.6 | |
| 3 or more | 908 | 32.3 | 27.9 | 37.5 | 2.3 | |

## 4.3 Summary

There are many similarities and some important differences in the characteristics of women in the three age groups according to their alcohol consumption. Women who consume alcohol at low levels that are not harmful to their health (low risk) are more likely than other women to:

- live in urban areas;
- have higher education;
- manage on their income without difficulty;
- be in the healthy weight range;
- have moderate or high levels of physical activity;
- have been born in Australia or another English-speaking country; and
- have better self-rated physical health.

Non-drinkers and women who rarely drink are more likely than other women to:

- have a non-English-speaking background;
- be a non-smoker;
- have more consultations with general practitioners;
- take a greater number of prescription medications (Mid-age and Older women); and
- be currently pregnant or ever pregnant (Younger women).

Women who consume alcohol at levels that are risky or high risk are more likely than other women their age to:

- have poorer mental health; and
- be current smokers.

and among Younger women to:

- be current users of multiple illicit drugs;
- have deliberately harmed themselves; and
- have had more male sexual partners.

(Note: these questions were asked of the Younger women at Survey 2.)

## 4.4 References

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Mishra G. and Schofield M. J. 1998. 'Norms for the physical and mental health component summary scores of the SF-36 for young, middle-aged and older Australian women', *Quality of Life* 7: 215-220.

Ware J. E. and Sherbourne C. D. 1992. 'The MOS 36-item Short-Form health survey (SF36): I. Conceptual framework and item selection', *Med Care* 30: 473-483.

# Section 5 Short-term risk drinking among Younger women

## 5.1 Methods

This section aims to identify factors that are associated with alcohol consumption at levels of short-term risk. The definition of short-term risk drinking is based on the Australian alcohol guidelines criterion of drinking five or more drinks on a single occasion.

In this section, the frequency of short-term risk drinking were defined as *never*, *rarely* (less than once a month), *sometimes* (once a month) and *often* (once a week or more). The frequency of short-term risk drinking according to levels of long-term alcohol consumption were tabulated.

Groups of women, defined according to their short-term risk drinking, were compared. The Survey 1 characteristics which were compared included area of residence, self-reported socio-demographic variables, measures of health, and measures of health service use. Health risk behaviours measured at Survey 2 were also compared.

## 5.2 Results

While long-term risk drinking is relatively uncommon, short-term risk drinking occurs at least once a week in almost one in five of these young women (Figure 5.1).

**Figure 5.1 Short-term risk drinking at Survey 1, Younger women (n= 14,247)**

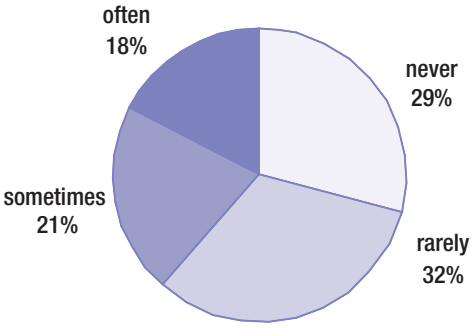

Table 5.1 shows the alcohol consumption of Younger women, by their frequency of short-term risk drinking. The findings for Younger women are that:

- Risky or high risk drinkers are most likely to participate in short-term risk drinking often (at least weekly) (93%).
- One third of low risk drinkers participate in short-term risk drinking about once a month and 24% do so at least weekly.

**Table 5.1 Alcohol consumption of Younger women by frequency of short-term risk drinking, Survey 1 (n=14,247)**

| | | Frequency ofshort-term risk drinking | | | | |
|---|---|---|---|---|---|---|
| | N | Never (n=3947) | Rarely (less than monthly) (n=4533) | Sometimes (Once a month) (n=3030) | Often (At least weekly) (n=2513) | p-value |
| Non-drinker | 1253 | 100.0 | 0.0 | 0.0 | 0.0 | <.001 |
| Rarely drinks | 4853 | 46.5 | 44.1 | 9.0 | 0.5 | |
| Low risk drinker | 7192 | 8.4 | 33.5 | 34.5 | 23.7 | |
| Risky or high risk drinker | 782 | 0.0 | 0.8 | 5.9 | 93.3 | |

Table 5.2 shows the socio-demographic characteristics of Younger women, by their frequency of short-term risk drinking. The findings for Younger women are that:

- Women aged 18 to 19 years were more likely to report 'often' having five or more drinks on a single occasion (21% to 22%) than women aged 22 to 23 years (14%).
- Short-term risk drinking 'sometimes' or 'often' was more likely in Australian-born women (41%) and those of English-speaking background (37%) than non-ESB women (12%).
- Separated, divorced and widowed young women were most likely (19%), and women who had never married were least likely (7%), to participate in short-term risk drinking 'often'.
- Younger women with a university degree were most likely to report 'rarely' drinking at levels of short-term risk (34%), although lower education was associated with never drinking at short-term risk (perhaps because of higher rates of pregnancy and motherhood).
- Drinking at levels of short-term risk 'often' became more prevalent as difficulty managing on available income increased (14% to 20%).
- There was no consistent relationship between being rushed and busy in this age group and short-term risk drinking (although the association was statistically significant).

**Table 5.2 Socio-demographic characteristics of Younger women by frequency of short-term risk drinking, Survey 1 (n=14,247)**

| | | Frequency of short-term risk drinking | | | | |
|---|---|---|---|---|---|---|
| | N | Never (n=3947) | Rarely (n=4533) | Sometimes (n=3030) | Often (n=2513) | p-value |
| **Age in years** | | | | | | |
| 18 | 814 | 28.3 | 28.2 | 21.3 | 22.2 | <.001 |
| 19 | 2945 | 28.6 | 28.1 | 22.7 | 20.6 | |
| 20 | 2920 | 28.2 | 32.0 | 21.9 | 17.9 | |
| 21 | 2719 | 28.0 | 33.0 | 21.8 | 17.2 | |
| 22 | 2751 | 29.5 | 36.1 | 20.1 | 14.3 | |
| 23 | 1984 | 33.2 | 33.1 | 19.6 | 14.1 | |
| **Country of birth** | | | | | | |
| Australia | 12,926 | 26.5 | 32.9 | 22.3 | 18.3 | <.001 |
| Other English speaking background | 542 | 26.0 | 36.7 | 20.8 | 16.5 | |
| Other | 664 | 68.0 | 20.0 | 7.2 | 4.9 | |
| **Marital status** | | | | | | |
| Never married | 10,850 | 49.4 | 31.8 | 12.0 | 6.8 | <.001 |
| Married | 1265 | 26.5 | 40.0 | 21.5 | 11.9 | |
| De facto | 1928 | 34.5 | 29.7 | 22.1 | 13.7 | |
| Separated/divorced/ widowed | 134 | 27.4 | 31.1 | 22.2 | 19.3 | |
| **Highest qualification** | | | | | | |
| School certificate or less | 2427 | 33.9 | 30.6 | 18.1 | 17.4 | <.001 |
| Higher school certificate | 7600 | 28.1 | 31.7 | 22.2 | 18.0 | |
| Trade/diploma | 2563 | 29.2 | 33.8 | 20.2 | 16.8 | |
| University degree | 1576 | 28.2 | 34.2 | 22.2 | 15.4 | |
| **Manage on income** | | | | | | |
| Impossible/difficult all the time | 2624 | 25.0 | 32.6 | 22.4 | 19.9 | <.001 |
| Difficult some of the time | 4706 | 27.7 | 31.6 | 22.0 | 18.8 | |
| Not too bad | 5070 | 30.3 | 32.7 | 20.9 | 16.1 | |
| Easy | 1795 | 34.8 | 31.7 | 19.6 | 13.9 | |
| **Feel rushed/too busy** | | | | | | |
| Never/monthly | 2254 | 32.0 | 30.4 | 21.0 | 16.6 | <.001 |
| Weekly | 2838 | 28.0 | 31.7 | 22.3 | 18.0 | |
| Few times weekly | 5853 | 27.3 | 33.6 | 21.9 | 17.3 | |
| Every day | 2378 | 31.8 | 32.1 | 18.5 | 17.6 | |

Table 5.3 shows the health status of Younger women, by their frequency of short-term risk drinking. The findings for Younger women are that:

- Self-rated physical health of those who sometimes drink at short-term risk levels was significantly better than that of women who never or rarely participated in short-term risk drinking.
- Self-rated mental health of women who never drink at short-term risk was significantly better than that of other women.
- Smokers were more likely to 'often' participate in short-term risk drinking (31% to 32%) than ex-smokers (15%) and those who had never smoked (9%).

- Young women who had moderate or high levels of physical activity were more likely to participate in short-term risk drinking 'sometimes' or 'often' (41% to 42%) than those who were sedentary or had low levels of physical activity (35%).
- Young women who were obese were least likely to drink at short-term risk 'sometimes' or 'often' (29%) compared with underweight (36%), acceptable weight (41%) and overweight (38%).
- Women who were currently pregnant were less likely to participate in short-term risk drinking than other women.
- Women who had ever been pregnant were also less likely to participate in short-term risk drinking than women who had not been pregnant.

**Table 5.3 Health status of Younger women by frequency of short-term risk drinking, Survey 1 (n=14,247)**

| | | Frequency of short-term risk drinking | | | | |
|---|---|---|---|---|---|---|
| | N | Never (n=3947) | Rarely (n=4533) | Sometimes (n=3030) | Often (n=2513) | p-value |
| **SF-36 mean (95% confidence interval)** | | | | | | |
| Physical health summary score | 13746 | 49.5 (49.2; 49.8) | 50.3 (50.0; 50.6) | 50.8 (50.4; 51.1) | 50.1 (49.7; 50.5) | <.001 |
| Mental health summary score | 13746 | 50.6 (50.3; 50.9) | 50.1 (49.8; 50.4) | 49.8 (49.5; 50.2) | 49.1 (48.7; 49.5) | <.001 |
| **Smoking status** | | | | | | |
| Never smoked | 7123 | 40.4 | 32.9 | 17.5 | 9.2 | <.001 |
| Ex-smoker | 2085 | 23.9 | 37.7 | 23.3 | 15.1 | |
| Smoke <20 cigs per day | 2356 | 14.6 | 28.1 | 26.1 | 31.1 | |
| Smoke ≥20 cigs per day | 1712 | 14.5 | 28.8 | 25.1 | 31.6 | |
| **Physical activity** | | | | | | |
| None or low | 6220 | 31.8 | 32.9 | 19.4 | 15.9 | <.001 |
| Moderate | 3646 | 27.2 | 30.8 | 23.1 | 18.9 | |
| High | 4287 | 27.0 | 32.3 | 22.6 | 18.1 | |
| **Body mass index*** | | | | | | |
| Underweight | 3306 | 33.4 | 30.6 | 20.5 | 15.6 | <.001 |
| Acceptable | 6471 | 27.2 | 32.1 | 22.2 | 18.6 | |
| Overweight | 1969 | 27.1 | 35.0 | 21.5 | 16.3 | |
| Obese | 840 | 37.0 | 34.3 | 16.6 | 12.1 | |
| **Currently pregnant** | | | | | | |
| Yes | 419 | 53.6 | 28.4 | 11.5 | 6.4 | <.001 |
| No | 13,467 | 28.5 | 32.3 | 21.7 | 17.6 | |
| Don't know | 232 | 28.7 | 34.0 | 15.5 | 21.9 | |
| **Ever pregnant** | | | | | | |
| Yes | 2647 | 32.4 | 32.7 | 19.0 | 15.9 | <.001 |
| No | 11,441 | 28.6 | 32.0 | 21.8 | 17.6 | |

* pregnant women not included

Table 5.4 shows the health service use of Younger women, by their frequency of short-term risk drinking. The findings for Younger women are that:

- There is an inverted U-shaped association between visits to general practitioners and frequency of short-term risk drinking. Women who had few visits or who had seven or more visits to a general practitioner in the last year were less likely to participate in short-term risk drinking.
- Women taking three or more prescription medications were more likely to drink at short-term risk 'often' (20%) compared with those taking fewer medications (17%).
- Short-term risk drinking 'sometimes' or 'often' increased from 36% of women not taking non-prescription medications to 43% of women taking three or more non-prescription medications.

**Table 5.4 Health service use of Younger women by frequency of short-term risk drinking, Survey 1 (n=14,247)**

| | N | Frequency of short-term risk drinking | | | | p-value |
|---|---|---|---|---|---|---|
| | | Never (n=3947) | Rarely (n=4533) | Sometimes (n=3030) | Often (n=2513) | |
| **General practitioner visits in last year** | | | | | | |
| 0-2 | 5369 | 32.7 | 31.0 | 20.0 | 16.3 | <.001 |
| 3-4 | 3967 | 27.3 | 32.6 | 22.7 | 17.5 | |
| 5-6 | 2478 | 23.7 | 33.4 | 23.3 | 19.7 | |
| 7 or more | 2372 | 30.7 | 32.7 | 19.9 | 16.7 | |
| **Prescription medications in last four weeks** | | | | | | |
| None | 6054 | 32.6 | 30.9 | 19.9 | 16.7 | <.001 |
| 1 | 4906 | 26.1 | 33.8 | 22.5 | 17.5 | |
| 2 | 2001 | 26.2 | 33.3 | 23.9 | 16.7 | |
| 3 or more | 1242 | 29.7 | 30.3 | 19.8 | 20.3 | |
| **Non-prescription medications in last four weeks** | | | | | | |
| None | 5654 | 32.9 | 31.2 | 19.5 | 16.4 | <.001 |
| 1 | 4757 | 28.2 | 33.7 | 21.9 | 16.3 | |
| 2 | 2351 | 24.6 | 32.7 | 22.7 | 20.1 | |
| 3 or more | 1445 | 26.6 | 30.1 | 23.9 | 19.5 | |

Table 5.5 shows the health risk taking behaviour of Younger women, by their frequency of short-term risk drinking, at Survey 2. These more sensitive questions were not asked at Survey 1 (and were not asked of the Mid-age and Older women at Survey 1 or Survey 2). The findings for Younger women are that:

- Women who reported deliberately harming themselves in the past six months were more likely to be drinking at short-term risk levels than other women.
- Illicit drug use was related to short-term risk drinking. Sixty percent of current users of multiple drugs and 51% of current users of cannabis only were drinking at short-term risk 'sometimes' or 'often'. Only 18% of women who had never used illicit drugs participated in short-term risk drinking 'sometimes' or 'often'.
- The frequency of short-term risk drinking was higher for women who had had more male sexual partners.

**Table 5.5 Health risk behaviours of Younger women by frequency of short-term risk drinking, Survey 2 (n=9571)**

| | N | Frequency of short-term risk drinking | | | | p-value |
|---|---|---|---|---|---|---|
| | | Never (n=2688) | Rarely (n=3585) | Sometimes (n=1931) | Often (n=1367) | |
| **Deliberate self harm in last six months** | | | | | | |
| Yes | 347 | 18.2 | 34.2 | 25.4 | 22.2 | <.001 |
| No | 9232 | 28.8 | 37.3 | 19.8 | 14.1 | |
| **Use of illicit drugs** | | | | | | |
| Never used | 4141 | 45.8 | 35.9 | 12.4 | 5.9 | <.001 |
| Cannabis only, not in last year | 2237 | 20.9 | 44.4 | 21.5 | 13.3 | |
| Cannabis only, in last year | 943 | 11.0 | 38.4 | 27.1 | 23.6 | |
| Multiple, not in last year | 657 | 20.4 | 39.0 | 25.8 | 14.8 | |
| Multiple, in last year | 1540 | 9.8 | 30.0 | 29.6 | 30.7 | |
| **Number of male sexual partners** | | | | | | |
| None | 720 | 57.5 | 30.3 | 9.6 | 2.6 | <.001 |
| One | 2014 | 38.6 | 38.6 | 15.7 | 7.1 | |
| Two | 1056 | 23.3 | 42.9 | 21.7 | 12.2 | |
| Three or more | 4680 | 13.8 | 36.2 | 25.5 | 24.6 | |
| Don't want to answer | 347 | 28.4 | 32.6 | 21.4 | 17.6 | |

## 5.3 Summary

Alcohol consumption among Younger women, by their frequency of short-term risk drinking, was examined. The findings are that:

- 93% of risky drinkers participated in short-term risk drinking at least weekly.
- One third of low risk drinkers participated in short-term risk drinking about once a month and 24% did so at least weekly.

Factors associated with short-term risk drinking among Younger women were explored. In summary short-term risk drinking occurred more often among:

- Australian-born women and those of English-speaking background.
- Separated, divorced and widowed young women.
- Women who had difficulty managing on available income.
- Current smokers.
- Women who were not or have never been pregnant.
- Women who reported deliberately harming themselves.
- Current users of illicit drugs.
- Women who had had more male sexual partners.

# Section 6 What predicts becoming a more or less risky drinker?

## 6.1 Introduction

This section aims to identify factors that are associated with changes in alcohol consumption between Survey 1 and Survey 2. Hence, only those women who consumed alcohol at Survey 1 or Survey 2 are included. Perpetual non-drinkers are excluded from the analysis.

Before describing the analysis and presenting the results, Section 6.2 presents a description of women who completed Survey 2 in each age cohort, according to their alcohol consumption at Survey 1.

## 6.2 Retention of participants between Survey 1 and Survey 2

The following tables show retention of Younger, Mid-age and Older women between Survey 1 and Survey 2 by alcohol consumption. The reasons for non-response or 'loss to follow-up' are broadly categorised as having withdrawn from the study, dying between Survey 1 and Survey 2, and other reasons. The 'other non-respondent' category includes women for whom no current address was available, those who were overseas, and those who did not complete the survey for some other reason.

Table 6.1 shows response to Survey 2 by alcohol consumption at Survey 1, for Younger women. The findings are:

- Non-drinkers were most likely to be non-respondents, with 62% completing Survey 2.
- Women who rarely drink and low risk drinkers had similar profiles for loss to follow-up.
- 68% of the risky/high risk group completed Survey 2 which compares favourably with the rest of the cohort.

**Table 6.1 Younger women - Response to Survey 2 by alcohol consumption at Survey 1 (n=14,088)**

| | Non-drinker (n=1254) % | Rarely drinks (n=4855) % | Low risk drinker (n=7197) % | Risky drinker (n=782) % |
|---|---|---|---|---|
| Respondent | 62.1 | 67.8 | 69.5 | 67.8 |
| Withdrawn | 2.7 | 1.3 | 1.6 | 2.5 |
| Deceased | 0.1 | 0.2 | 0.1 | 0.8 |
| Other non-respondent | 35.1 | 30.8 | 28.8 | 28.8 |

Results are weighted for area of residence

Table 6.2 shows response to Survey 2 by alcohol consumption at Survey 1, for Mid-age women. The findings are:

- Non-drinkers were most likely to be non-respondents, with only 85% completing Survey 2.
- Low risk drinkers were most likely to be respondents, with 92% completing Survey 2.

**Table 6.2 Mid-age women – Response to Survey 2 by alcohol consumption at Survey 1 (n=13,585)**

| | Non-drinker (n=2063) % | Rarely drinks (n=4273) % | Low risk drinker (n=6533) % | Risky drinker (n=716) % |
|---|---|---|---|---|
| Respondent | 85.3 | 88.3 | 91.7 | 89.2 |
| Withdrawn | 2.9 | 2.2 | 1.1 | 1.1 |
| Deceased | 0.8 | 0.3 | 0.3 | 0.3 |
| Other non-respondent | 11.0 | 9.3 | 6.9 | 9.4 |

Results are weighted for area of residence

Table 6.3 shows response to Survey 2 by alcohol consumption at Survey 1, for Older women. The findings are:

- Non-drinkers were more likely to be non-respondents.
- Women who drank alcohol at various levels of consumption had similar response rates.

**Table 6.3 Older women - Response to Survey 2 by alcohol consumption at Survey 1 (n=11,948)**

| | Non-drinker (n=4127) % | Rarely drinks (n=3487) % | Low risk drinker (n=3926) % | Risky drinker (n=408) % |
|---|---|---|---|---|
| Respondent | 80.7 | 83.9 | 86.3 | 85.5 |
| Withdrawn | 6.1 | 5.3 | 5.2 | 3.9 |
| Deceased | 4.8 | 3.8 | 2.7 | 3.0 |
| Other non-respondent | 8.4 | 7.0 | 5.7 | 7.7 |

Results are weighted for area of residence

## 6.3 Methods

In the results shown in this section, the low risk drinker category (as defined in the Australian alcohol guidelines, see Table 2.2) comprises the two subgroups called 'rarely drinks' and 'low risk drinker' (shown in Table 3.4). Hence, there are four transition categories of alcohol consumption between Survey 1 and Survey 2 (see Table 6.4):

(a) remain low risk (which will be the reference group for comparisons),

(b) risky/high risk to low risk,

(c) low risk to risky/high risk,

(d) remain risky/high risk.

**Table 6.4 Definition of alcohol transition categories**

| | | Survey 2 | |
|---|---|---|---|
| | | **Low risk** | **Risky/high risk** |
| **Survey 1** | **Low risk** | remain low risk (a) | low risk to risky/high risk (c) |
| | **Risky/high risk** | risky/high risk to low risk (b) | remain risky/high risk (d) |

These data can be analysed using a multinomial logistic regression. This method simultaneously compares each of the groups labelled (b), (c) and (d) above, with the reference group (a). Separate analyses were conducted for Younger, Mid-age and Older women. The explanatory variables thought to be associated with changes in alcohol consumption that were included in the models varied slightly for each age group. All models initially included transitions (changes over time) in marital status, smoking status, and also having had a major illness, injury or surgery at Survey 1 or Survey 2. To adjust for large changes in physical and mental health, an improvement or decline of more than ten points in PCS or MCS between Survey 1 and Survey 2 was defined as an increase or decrease in health (see Section 4.1 for further information about PCS and MCS).

Other explanatory variables in the analyses were changes in work status (Younger and Mid-age women), study (Younger women), motherhood (Younger women), care-giving (Mid-age and Older women) and managing on available income (Mid-age and Older women). The analysis for the Younger women also included whether they were pregnant at either survey. All analyses were also adjusted for area of residence and educational qualifications.

**Table 6.5 Transition and other explanatory variables used in analyses of change in alcohol consumption among 9095 Younger women who consumed alcohol at Survey 1 or Survey 2**

| 1996 | 2000 | % |
|---|---|---|
| | **Highest educational qualification** | |
| | School certificate or less | 9.0 |
| | Higher school certificate | 22.7 |
| | Trade/diploma | 23.3 |
| | University degree | 45.0 |
| **Transition in marital status** | | |
| Never married | Never married | 52.0 |
| Never married/ separated/ widowed/ divorced/de facto | Married | 16.5 |
| Never married/ separated/ widowed/ divorced/ married | De facto | 16.4 |
| Married/ de facto | Married/ de facto (unchanged) | 9.5 |
| All other categories/ incomplete data | | 5.7 |
| **Transition in work status** | | |
| Work (paid or in family business) | Work (paid or in family business) | 47.2 |
| No work | Work (paid or in family business) | 39.9 |
| Work (paid or in family business) | No work | 5.6 |
| No work | No work | 7.3 |
| **Transition in study status** | | |
| Not studying | Not studying | 37.4 |
| Study | Not studying | 32.9 |
| Not studying | Study | 9.9 |
| Study | Study | 19.8 |
| **Pregnant during Survey 1** | | 1.9 |
| | **Pregnant during Survey 2** | 4.3 |
| **Transition in motherhood status** | | |
| Not a mother | Not a mother | 84.7 |
| Not a mother | Mother | 9.6 |
| Mother | Mother | 5.7 |
| **Transition in smoking status** | | |
| Non-smoker/ ex-smoker | Non-smoker/ ex-smoker | 67.1 |
| Smoker | Smoke fewer cigarettes/ ex-smoker | 15.7 |
| Non-smoker/ ex-smoker/ smoker | Smoker/ Smoke more cigarettes | 10.2 |
| Smoker (same number of cigarettes) | Smoker (same number of cigarettes) | 7.0 |
| **Transition in physical health (PCS)** | | |
| Unchanged | | 71.4 |
| Decline in physical health | | 15.4 |
| Improvement in physical health | | 13.2 |
| **Transition in mental health (MCS)** | | |
| Unchanged | | 68.8 |
| Decline in mental health | | 15.2 |
| Improvement in mental health | | 16.0 |
| **Major illness/ injury or surgery in the last year at Survey 1** | | 15.4 |
| **Major illness/ injury or surgery in the last year at Survey 2** | | 12.6 |

# 6.4 Results

## 6.4.1 Younger women

Table 6.5 shows the demographic and health-related transitions and other variables that were included in the preliminary analysis of data from Younger women. Percentages were weighted for area of residence.

The findings for Younger women are:

- Most women (68%) had completed post-school qualifications by Survey 2.
- Half the women had never married, a third had either become married or begun living in a de facto relationship since Survey 1, and 10% were married at both surveys or in de facto relationships at both surveys.
- The majority (87%) were working at Survey 2, with 40% having joined the work force since Survey 1.
- Half the women were studying at Survey 1 compared with 30% at Survey 2.
- Small percentages of women were currently pregnant at the time of the survey—2% at Survey 1 and 4% at Survey 2.
- Six percent of women were mothers at Survey 1 and 16% by Survey 2.
- Two-thirds of women were non-smokers, 16% had decreased and 10% had increased their consumption of cigarettes.
- The physical and mental health of most women (70%) remained within 10 points of their Survey 1 score.
- Around 15% of women had a major illness, injury or surgery in the year before Survey 1 and 13% in the year before Survey 2.

Table 6.6 shows the odds of becoming a less risky drinker (changing from risky to low risk drinking), the odds of becoming a risky drinker (changing from low risk to risky drinking) and the odds of remaining a risky drinker compared with the odds of remaining a low risk drinker, for various demographic and health transitions.

For example, the estimated odds ratio of 4.74 in Table 6.6 (relating to smoking transition) implies that the odds of changing from risky to low risk drinking, compared with the odds of remaining a low risk drinker, is about five times higher for Younger women who decreased their smoking (were smoking fewer cigarettes at Survey 2 than at Survey 1) compared with those who were non-smokers, after adjusting for other variables in the model.

Changes in work, study, physical health and mental health, and being pregnant at either survey were not significantly associated with changes in alcohol consumption. After adjusting for area of residence and educational qualifications, the findings for Younger women (compared with the odds of remaining a low risk drinker) are that:

- Women who had married since Survey 1 had decreased odds of remaining or becoming risky drinkers.
- Women who had moved into de facto relationships had decreased odds of remaining risky drinkers.

- Women who had remained married or living in de facto relationships had decreased odds of changing from risky to low risk drinking.
- Women who became mothers after Survey 1 had decreased odds of remaining or becoming risky drinkers.
- Women who were mothers at both Surveys had decreased odds of remaining risky drinkers.
- The odds of being in any of the three alcohol consumption transition groups (see Table 6.4), compared with the odds of remaining a low risk drinker, is significantly higher for women who smoked at either Survey 1 or Survey 2 or both, compared with non-smokers.
- Women who had had a major illness, injury or surgery in the year before Survey 1 were more likely to decrease their alcohol consumption from risky to low risk between Surveys 1 and 2. Those with an illness, injury or surgery in the year before Survey 2, however, were more likely to have increased their alcohol consumption from low to risky since Survey 1.

**Table 6.6 Multinomial logistic regression results for Younger women (n=7563).**
Odds ratios (and 95% confidence intervals) for three categories of transition in alcohol consumption compared with remaining a low risk drinker (reference category).
Statistically significant results are shown in bold typeface

| 1996-2000 | Risky to low risk | Low risk to risky | Remain risky |
|---|---|---|---|
| **Marital transitions** | | | |
| Never married | 1.0 | 1.0 | 1.0 |
| Became married | 0.89 (0.63; 1.25) | **0.40 (0.23; 0.71)** | **0.21 (0.06; 0.67)** |
| Became de facto | 1.22 (0.91; 1.62) | 0.66 (0.43; 1.01) | **0.40 (0.19; 0.85)** |
| Married or de facto | **0.41 (0.24; 0.73)** | 0.79 (0.45; 1.39) | 1.05 (0.48; 2.30) |
| Other | 1.14 (0.72; 1.83) | 1.10 (0.63; 1.91) | 0.60 (0.21; 1.69) |
| **Motherhood status** | | | |
| Not a mother | 1.0 | 1.0 | 1.0 |
| Not a mother to mother | 0.87 (0.59; 1.28) | **0.38 (0.18; 0.77)** | **0.32 (0.11; 0.93)** |
| Mother | 0.59 (0.32; 1.07) | 0.60 (0.31; 1.17) | **0.18 (0.04; 0.79)** |
| **Smoking transition** | | | |
| Non-smoker | 1.0 | 1.0 | 1.0 |
| Decreased smoking | **4.74 (3.64; 6.18)** | **2.27 (1.52; 3.39)** | **4.73 (2.60; 8.63)** |
| Increased smoking | **2.00 (1.37; 2.93)** | **3.58 (2.45; 5.23)** | **2.98 (1.43; 6.19)** |
| Smoker | **3.13 (2.14; 4.59)** | **3.53 (2.26; 5.52)** | **7.44 (3.90; 14.21)** |
| **Major illness, injury or surgery in 1995** | | | |
| No | 1.0 | 1.0 | 1.0 |
| Yes | **1.84 (1.41; 2.41)** | 0.90 (0.59; 1.36) | 1.58 (0.90; 2.77) |
| **Major illness, injury or surgery in 1999** | | | |
| No | 1.0 | 1.0 | 1.0 |
| Yes | 1.33 (0.98; 1.82) | **1.54 (1.05; 2.27)** | 1.36 (0.72; 2.58) |

Results are shown after adjusting for area of residence and education

**Table 6.7** **Transition and other explanatory variables used in analyses of change in alcohol consumption among 10,228 Mid-age women who consumed alcohol at Survey 1 or Survey 2**

| 1996 | 1998 | % |
|---|---|---|
| | **Highest educational qualification** | |
| | School certificate or less | 44.2 |
| | Higher school certificate | 17.4 |
| | Trade/diploma | 20.7 |
| | University degree | 17.7 |
| **Transition in marital status** | | |
| Married | Married | 74.0 |
| De facto | De facto | 4.3 |
| Separated/ divorced/ widowed/ single | Separated/ divorced/ widowed/ single (no change) | 14.0 |
| Changed marital status | | 7.7 |
| **Transition in work status** | | |
| Work (paid or in family business) | Work (paid or in family business) | 73.3 |
| No work | Work (paid or in family business) | 4.9 |
| Work (paid or in family business) | No work | 7.8 |
| No work | No work | 14.0 |
| **Transition in care giving status** | | |
| Carer | Carer | 11.7 |
| Carer | Non carer | 7.7 |
| Non carer | Carer | 10.3 |
| Non carer | Non carer | 70.3 |
| **Transition in managing on available income** | | |
| Impossible /difficult all the time | Impossible /difficult all the time | 6.6 |
| Difficult some of the time | Difficult some of the time | 13.4 |
| Not too bad /easy | Not too bad /easy | 48.1 |
| Not too bad /easy /difficult some of the time | More difficulty managing on income | 17.1 |
| Impossible /difficult all or some of the time | Less difficulty managing on income | 14.8 |
| **Transition in smoking status** | | |
| Non-smoker/ ex-smoker | Non-smoker/ ex-smoker | 81.6 |
| Smoker | Smoke fewer cigarettes/ ex-smoker | 3.5 |
| Non-smoker/ ex-smoker/ smoker | Smoker/ Smoke more cigarettes | 3.6 |
| Smoker (same number of cigarettes) | Smoker (same number of cigarettes) | 11.3 |
| **Transition in physical health (PCS)** | | |
| Unchanged | | 80.5 |
| Decline in physical health | | 11.5 |
| Improvement in physical health | | 8.0 |
| **Transition in mental health (MCS)** | | |
| Unchanged | | 76.2 |
| Decline in mental health | | 11.5 |
| Improvement in mental health | | 12.3 |
| **Major illness/ injury or surgery in the last year at Survey 1** | | 14.2 |
| **Major illness/ injury or surgery in the last year at Survey 2** | | 12.2 |

### 6.4.2 Mid-age women

Table 6.7 shows the demographic and health-related transitions and other variables that were included in the preliminary analysis of data from Mid-age women. The findings are:

- Around 40% had post-school qualifications (no transitions were calculated for this variable as there is little change in this age group).
- Three-quarters of the women were married at both surveys and 14% had remained separated, divorced, widowed or single.
- Most women (73%) were in paid work or working in a family business at both surveys.
- At both surveys, around one in five women were caring for another person.
- Many women (48%) found it easy to manage on their income at Surveys 1 and 2, but 19% had at least some difficulty and 17% were finding it more difficult to manage on their income at Survey 2 than at Survey 1.
- Most women were non-smokers (82%) or continued to smoke at the same level (11%).
- The physical and mental health of most women at Survey 2 (81% and 76%) remained unchanged (within 10 points of Survey 1).
- One in eight women had had a major illness, injury or surgery in the last year at Survey 1, and the same number at Survey 2.

Table 6.8 shows the odds of becoming a less risky drinker (changing from risky to low risk drinking), the odds of becoming a risky drinker (changing from low risk to risky drinking) and the odds of remaining a risky drinker, compared with the odds of remaining a low risk drinker, for various demographic and health transitions.

Changes in work, care giving, income, and physical health, and having a major illness or injury or surgery at Surveys 1 and 2, were not significantly associated with changes in alcohol consumption. After adjusting for area of residence and level of education, the findings for Mid-age women (compared with the odds of remaining a low risk drinker) are that:

- Women living in de facto relationships had twice the odds of either changing their alcohol consumption or remaining risky drinkers compared with women who were married at both surveys.
- Women who had changed their marital status since Survey 1 had higher odds of changing from risky to low risk drinkers.
- Women who were smokers, particularly those whose tobacco consumption remained the same, had higher odds of remaining risky drinkers.
- Women whose smoking habits remained unchanged, and those who decreased the amount they smoked, had at least twice the odds of changing from low risk to risky drinkers and from risky to low risk drinkers. However those who decreased the amount they smoked had four times the odds of changing from risky to low risk drinkers.
- Women whose mental health was worse at Survey 2 had higher odds of increasing from low risk to risky drinking.
- Women whose mental health had improved at Survey 2 had higher odds of changing from risky to low risk drinking or remaining risky drinkers.

**Table 6.8 Multinomial logistic regression results for Mid-age women (n=9300).**
Odds ratios (and 95% confidence intervals) for three categories of transition in alcohol consumption compared with remaining a low risk drinker (reference category).
Statistically significant results are shown in bold typeface

| 1996-1998 | Risky to low risk | Low risk to risky | Remain risky |
|---|---|---|---|
| **Marital transitions** | | | |
| Married at both surveys | 1.0 | 1.0 | 1.0 |
| De facto at both surveys | **2.06 (1.16; 3.65)** | **2.05 (1.22; 3.45)** | **1.93 (1.31; 2.86)** |
| No partner at both surveys | 0.82 (0.49; 1.37) | 1.29 (0.88; 1.90) | **0.69 (0.48; 0.98)** |
| Changed marital status | **1.69 (1.03; 2.76)** | 1.14 (0.68; 1.91) | 1.21 (0.84; 1.74) |
| **Smoking transitions** | | | |
| Non-smoker | 1.0 | 1.0 | 1.0 |
| Decreased smoking | **4.08 (2.45; 6.78)** | **2.19 (1.24; 3.85)** | **1.86 (1.11; 3.09)** |
| Increased smoking | 0.85 (0.31; 2.32) | 1.58 (0.82; 3.04) | **2.28 (1.43; 3.63)** |
| Smoker | **2.52 (1.69; 3.77)** | **2.28 (1.59; 3.26)** | **3.96 (3.09; 5.07)** |
| **Mental health transitions** | | | |
| Unchanged | 1.0 | 1.0 | 1.0 |
| Decline in mental health | 1.05 (0.64; 1.72) | **1.59 (1.09; 2.31)** | 0.86 (0.60; 1.23) |
| Improvement in mental health | **1.58 (1.04; 2.39)** | 1.25 (0.83; 1.87) | **1.46 (1.10; 1.95)** |

Results are shown after adjusting for area of residence and education.

### 6.4.3 Older women

Table 6.9 shows the demographic and health-related transitions and other variables that were included in the preliminary analysis of data for Older women. The findings are:

- Around 20% of the women had post-school qualifications.
- Half the women were married at both surveys, while 40% were widowed at Survey 1 or had become widowed by Survey 2.
- At both surveys, around one in five women was caring for another person.
- Two-thirds of the women found it easy to manage on their income at Surveys 1 and 2, but 12% were finding it more difficult to manage on their income at Survey 2 than Survey 1.
- Most women were non-smokers (92%).
- The physical health of most women at Survey 2 (71%) had remained within 10 points of Survey 1, but one in four women had worse physical health by Survey 2.
- The mental health of most women (65%) at Survey 2 had remained within 10 points of Survey 1, with one in four women having worse mental health at Survey 2.
- Around 17% of women had had a major illness, injury or surgery in the last year at Survey 1, and 23% at Survey 2.

**Table 6.9 Transition and other explanatory variables used in analyses of change in alcohol consumption among 6406 Older women who consumed alcohol at Survey 1 or Survey 2**

| 1996 | 1999 | % |
|---|---|---|
| | **Highest educational qualification** | |
| | No formal qualifications | 26.4 |
| | School certificate | 39.2 |
| | Higher school certificate | 15.7 |
| | Trade/diploma | 13.3 |
| | University degree | 5.4 |
| **Transition in marital status** | | |
| Married /de facto | Married /de facto | 50.6 |
| Widowed | Widowed | 32.7 |
| | Became widowed | 7.5 |
| All other categories | All other categories | 9.2 |
| **Transition in care giving status** | | |
| Carer | Carer | 9.2 |
| Carer | Non carer | 9.9 |
| Non carer | Carer | 11.9 |
| Non carer | Non carer | 69.0 |
| **Transition in managing on available income** | | |
| Impossible /difficult all the time | Impossible /difficult all the time | 1.9 |
| Difficult some of the time | Difficult some of the time | 8.3 |
| Not too bad /easy | Not too bad /easy | 66.7 |
| Not too bad /easy /difficult some of the time | More difficulty managing on income | 11.9 |
| Impossible /difficult all or some of the time | Less difficulty managing on income | 11.2 |
| **Transition in smoking status** | | |
| Non-smoker/ ex-smoker | Non-smoker/ ex-smoker | 92.3 |
| Smoker at Survey 1 or Survey 2 | Smoker at Survey 1 or Survey 2 | 7.7 |
| **Transition in physical health (PCS)** | | |
| Unchanged | | 70.8 |
| Decline in physical health | | 24.7 |
| Improvement in physical health | | 10.2 |
| **Transition in mental health (MCS)** | | |
| Unchanged | | 65.4 |
| Decline in mental health | | 24,4 |
| Improvement in mental health | | 12.3 |
| **Major illness/ injury or surgery in the last year at Survey 1** | | 17.1 |
| **Major illness/ injury or surgery in the last year at Survey 2** | | 22.8 |

Table 6.10 shows the odds of becoming a less risky drinker (changing from risky to low risk drinking), the odds of becoming a risky drinker (changing from low risk to risky drinking) and the odds of remaining a risky drinker, compared with remaining a low risk drinker, for various demographic and health transitions.

Changes in care giving, income, physical health, and mental health, and illness or injury or surgery at Surveys 1 and 2 were not significantly associated with changes in alcohol consumption. After adjusting for area of residence and level of education, the findings for Older women (compared with the odds of remaining a low risk drinker) are that:

- Women who were widows or became widowed by Survey 2 were about half as likely to remain risky drinkers as women who were married at both surveys.
- Women who were smokers were almost twice as likely to change from low risk to risky drinkers and more than four times as likely to remain risky drinkers as non-smokers.

**Table 6.10** **Multinomial logistic regression results for Older women (n=5780).**
Odds ratios (and 95% confidence intervals) for three categories of transition in alcohol consumption compared with remaining a low risk drinker (reference category).
Statistically significant results are shown in bold typeface

| 1996-1999 | Risky to low risk | Low risk to risky | Remain risky |
|---|---|---|---|
| **Marital transitions** | | | |
| Married at both surveys | 1.0 | 1.0 | 1.0 |
| Widowed at both surveys | 1.41 (0.88; 2.27) | 1.01 (0.68; 1.51) | **0.53 (0.37; 0.75)** |
| Became widowed | 1.56 (0.75; 3.26) | 0.62 (0.27; 1.44) | **0.45 (0.23; 0.90)** |
| All other categories | 1.16 (0.51; 2.63) | 1.32 (0.73; 2.40) | 0.72 (0.43; 1.23) |
| **Smoking transitions** | | | |
| Non-smoker | 1.0 | 1.0 | 1.0 |
| Smoker | 1.32 (0.63; 2.76) | **1.87 (1.07; 3.25)** | **4.36 (3.04; 6.24)** |

Results are shown after adjusting for area of residence and education.

## 6.5 Summary

Among women in all three age groups, the most consistent and largest associations existed between smoking and drinking habits. Those who smoked had consistently higher odds of either remaining risky drinkers or changing from low risk to risky drinkers.

Among the Younger and Older women, changes in marital status were associated with decreased odds of remaining a risky drinker. Younger women who became married or formed de facto relationships between Survey 1 and Survey 2 had decreased odds of remaining risky drinkers or becoming risky drinkers. Older women who were widowed by Survey 2 had decreased odds

of remaining risky drinkers. Although Mid-age women without partners had decreased odds of remaining risky drinkers, those in de facto relationships had increased odds of remaining risky drinkers or changing their drinking habits.

Changes in health were also associated with changes in alcohol consumption among Younger and Mid-age women. Younger women who had a major illness, injury or surgery in the previous year had increased odds of changing their drinking habits. Mid-age women whose mental health had deteriorated by Survey 2 had increased odds of becoming risky drinkers, whereas those whose mental health had improved had increased odds of remaining risky drinkers or changing from risky to low risk drinkers.

Younger women who were mothers at both Survey 1 and Survey 2 had decreased odds of remaining risky drinkers. Those who had become new mothers by Survey 2 had decreased odds of remaining or becoming risky drinkers.

# Section 7 What long-term effects does alcohol consumption have on women's health?

## 7.1 Introduction

This section aims to investigate whether changes in health-related quality of life between Survey 1 and Survey 3, were associated with levels of alcohol consumption (measured by long-term risk). As there is little variation over time in alcohol consumption for Mid-age and Older women, their responses at Survey 1 were used to classify their long-term risk. As there were more changes in alcohol consumption over time among Younger women, a different classification, incorporating transitions in long-term risk over all three surveys, was used.

The association between alcohol consumption and death was also examined for both the Mid-age and Older cohorts; there have been very few deaths among the Younger women, 115 deaths among Mid-age women and 1068 among Older women. The association of alcohol consumption with the risk of withdrawing from the study was also examined for all cohorts. Between Survey 1 and Survey 3, 534 Younger women, 449 Mid-age women and 1541 Older women withdrew from the study.

Before describing the analysis and presenting the results, Section 7.2 presents a summary of who completed Survey 3 in each age cohort, according to their alcohol consumption at Survey 1.

## 7.2 Retention of participants between Survey 1 and Survey 3

The following tables show retention of Younger, Mid-age and Older women between Survey 1 and Survey 3, by alcohol consumption. The reasons for non-response or 'loss to follow-up' are broadly categorised as having withdrawn from the study, dying between Survey 1 and Survey 3, and other non-respondents. The 'other non-respondent' category includes women for whom no current address was available at Survey 3, those who were overseas, and those who did not complete the survey for some other reason.

Table 7.1 shows response to Survey 3 by alcohol consumption at Survey 1, among Younger women. The findings are:

- Low risk drinkers were most likely to be respondents to all 3 surveys and to Surveys 1 and 3.
- Women who rarely drink and low risk drinkers had similar profiles for loss to follow-up.

**Table 7.1 Younger women – Response to Survey 3 by alcohol consumption at Survey 1 (n=14,088)**

| | Non-drinker (n=1254) % | Rarely drinks (n=4855) % | Low risk drinker (n=7197) % | Risky drinker (n=782) % |
|---|---|---|---|---|
| Respondent at all 3 surveys | 48.0 | 53.7 | 56.3 | 51.5 |
| Respondent at Y1 and Y3 | 7.5 | 8.7 | 9.5 | 7.8 |
| Withdrawn | 6.4 | 3.4 | 3.7 | 3.8 |
| Deceased | 0.3 | 0.2 | 0.2 | 1.0 |
| Other non-respondent | 37.9 | 34.0 | 30.4 | 35.8 |

Results are weighted for area of residence

Table 7.2 shows response to Survey 3 by alcohol consumption at Survey 1, among Mid-age women. The findings are:

- Low risk drinkers were most likely to respond to Survey 3.
- Non-drinkers were more likely to have withdrawn from the study or died (although there were only 115 deaths).

**Table 7.2 Mid-age women – Response to Survey 3 by alcohol consumption at Survey 1 (n=13,585)**

| | Non-drinker n=2063 % | Rarely drinks n=4273 % | Low risk drinker n=6533 % | Risky drinker n=716 % |
|---|---|---|---|---|
| Respondent | 73.5 | 78.7 | 84.1 | 81.7 |
| Withdrawn | 5.2 | 4.3 | 2.7 | 2.6 |
| Deceased | 1.5 | 0.8 | 0.7 | 0.6 |
| Other non-respondent | 19.8 | 16.2 | 12.5 | 15.1 |

Results are weighted for area of residence

Table 7.3 shows response to Survey 3 by alcohol consumption at Survey 1, among Older women. The findings are:

- Low risk drinkers were most likely to respond to Survey 3.
- Non-drinkers were more likely to have died or withdrawn from the study.

**Table 7.3 Older women – Response to Survey 3 by alcohol consumption at Survey 1 (n=11,948)**

| | Non-drinker n=4127 % | Rarely drinks n=3487 % | Low risk drinker n=3926 % | Risky drinker n=408 % |
|---|---|---|---|---|
| Respondent | 64.6 | 69.9 | 74.9 | 72.8 |
| Withdrawn | 13.6 | 12.0 | 10.9 | 9.9 |
| Deceased | 10.1 | 8.0 | 6.1 | 7.0 |
| Other non-respondent | 11.7 | 10.0 | 8.1 | 10.4 |

Results are weighted for area of residence.

## 7.3 Survival analysis

The percentages of women who died or withdrew by Survey 3 in 2003, for each level of alcohol consumption (long-term risk), are shown in Tables 7.1 to 7.3. Among Mid-age women, 0.7% of the low risk drinkers and 1.5% of the non-drinkers had died by Survey 3 (Table 7.2). Among Older women, the percentages who died ranged from 6.1% of women who consumed alcohol at low levels of long-term risk, to 10.1% among the non-drinkers. Hence, survival rates appear to be lower for women who did not consume alcohol.

The association between survival and alcohol consumption, after adjusting for smoking, education, area of residence and comorbidity was assessed using proportional hazards models (see Table 7.4). Low risk drinkers were chosen as the reference category for alcohol consumption so that the model estimates the risk (or hazard) of dying, relative to the group of women drinking at low risk. A conservative p-value of 0.005 was used to adjust for multiple comparisons and large sample sizes. P values were computed with likelihood-ratio tests. Women who had withdrawn from the study were excluded from the analysis. Similar analyses estimated the risk of women withdrawing from the study in each of the alcohol groups, relative to the group of women drinking at low risk.

**Table 7.4 Predictor variables used in survival analyses for Mid-age and Older women**

| Variable | Values |
|---|---|
| Alcohol risk category | Non-drinker = 1 |
| | Rarely drinks = 2 |
| | Low risk = 3* |
| | Risky = 4 |
| Area | Non Urban = 0* |
| | Urban = 1 |
| Smoker | Non-smoker = 0* |
| | Smoker = 1 |
| Education | School only = 0* |
| | More education = 1 |
| Comorbidity | No chronic condition = 0* |
| | At least 1 chronic condition = 1 |

* Reference category in the model

For the Younger cohort, the number of deaths was very low so survival analyses were not conducted. Compared with the low risk drinkers, the non-drinkers were more likely to withdraw from the study (hazards ratio 1.5 (95% CI: 1.1, 2.0)).

For the Mid-age cohort, the hazards ratio for death for each alcohol consumption group was not significantly different from 1.0 (at the p = 0.005 level), indicating that their risk of dying was not different from that of the low risk drinkers. This may result from the low number of deaths among the Mid-age cohort (n=115), and further analysis can be conducted over the course of the longitudinal study. After adjusting for covariates, compared with the low risk drinkers, non-drinkers and women who rarely drank were more likely to withdraw from the study (hazards ratios for non-drinkers 2.1 (95% CI: 1.6, 2.7) and for women who rarely drank was 1.5 (95% CI: 1.2, 1.9)).

For the Older cohort, compared with the low risk drinkers, the hazard ratio for death for the non-drinkers was 1.7 (95% CI: 1.4, 2.0), and for women who rarely drank was 1.3 (95% CI: 1.1, 1.6). In other words, both groups of women had a significantly higher risk of dying during the survey period than low risk drinkers. The risk of dying during the study period for women who drank at risky levels was not significantly different from that of low risk drinkers. However, it should also be noted that the number of risky/high risk drinkers in the Older cohort was small (n=408). After adjusting for covariates, compared with the low risk drinkers, non-drinkers were more likely to withdraw from the study (hazards ratio 1.4 (95% CI: 1.2, 1.6)).

## 7.4 Methods for longitudinal analysis of health-related quality of life

For the longitudinal analyses within each cohort, we used the method of generalised estimating equations (GEE) to analyse changes in health-related quality of life (measured with the SF-36 at Survey 1, Survey 2 and Survey 3) in relation to alcohol consumption. The analysis adjusted for area of residence, smoking, education, BMI and comorbidity (Table 7.4). A different definition of alcohol consumption was used for Younger women (see Section 7.5.1). The outcome measures were the two summary scores and the eight dimensions of the SF-36 (see Section 4.1).

Data from women who died or withdrew were not included in the analysis (see Section 7.3). The tables presented in this report show the estimated effects of all levels of long-term alcohol consumption, even if these effects were not statistically significant. In some cases, it appears that the effect of alcohol on the health score is large enough to regard it as significant. However, the error surrounding the estimate may be too large and so the effect is not statistically significant at p<0.005.

# 7.5 Results

## 7.5.1 Younger women

The predictor variables used in the models for the Younger cohort differ slightly from those used in the analysis for the Mid-age and Older cohorts. Alcohol consumption over the seven-year period (1996-2003) among the Younger women was more variable, whereas for the Mid-age and Older cohorts there was little change between Survey 1 and Survey 3.

For the Younger cohort, a new longitudinal summary measure of long-term risk was defined, using the number of surveys at which women had reporting consuming alcohol at risky or high risk levels. The reference value in the models was the subgroup of women who drank at low risk for all three surveys. Very few women drank at long-term risky levels for all three surveys. The groups are:

Perpetual non-drinker (n = 253)

Remain low risk (n = 6656)

Risky at 1 survey (n = 567)

Risky at 2-3 surveys (n = 161)

After adjusting for area of residence, education, smoking, BMI and comorbidity, results of the analyses showed that alcohol consumption among the Younger women over the seven-year period was significantly associated with three health outcomes (Tables 7.5 and 7.6). Compared with low risk drinkers, non-drinkers had poorer physical functioning and lower physical health summary scores. Compared with low risk drinkers, women who remained risky drinkers had poorer mental health.

**Table 7.5 Summary of significant effects on health-related quality of life for Younger women 1996-2003, after adjusting for area of residence, smoking, education, BMI and comorbidity (◯ shows negative effect)**

| Alcohol (compared with low risk drinker) | PCS | MCS | GH | BP | PF | RP | MH | VT | SF | RE |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-drinker | ◯ | | | | ◯ | | | | | |
| Risky drinker at 1 survey | | | | | | | | | | |
| Risky drinker at 2-3 surveys | | | | | | | ◯ | | | |

**Table 7.6 Effects of alcohol consumption on health-related quality of life among Younger women, 1996-2003**
(statistically significant effects are shown in bold typeface)

| | Alcohol consumption (compared with low risk drinkers) Size of effect (95% CI) | | |
|---|---|---|---|
| **Health Outcome** | **Non-drinker** | **Risky drinker at 1 survey** | **Risky drinker at 2-3 surveys** |
| Physical Health Summary Score | **-2.2 (-3.7, -0.7)** | 0.1 (-0.8, 1.0) | -0.1 (-1.6, 1.4) |
| Mental Health Summary Score | 0.3 (-1.0, 1.6) | -1.0 (-2.0, 0.0) | -2.4 (-4.2, -0.7) |
| General Health | -0.8 (-3.6, 2.1) | -0.4 (-2.4, 1.6) | -3.4 (-7.1, 0.3) |
| Bodily Pain | -3.2 (-6.3, -0.2) | 0.4 (-1.7, 2.4) | -1.5 (-5.0, 2.0) |
| Physical Functioning | **-4.5 (-6.8, -2.2)** | -1.2 (-2.6, 0.3) | -0.2 (-2.1, 1.8) |
| Role Physical | -2.2 (-6.3, 1.9) | 0.8 (-1.9, 3.5) | -0.3 (-5.1, 4.5) |
| Mental Health | 0.6 (-1.8, 3.1) | -1.2 (-3.0, 0.6) | **-5.0 (-8.2, -1.9)** |
| Vitality | -1.6 (-4.4, 1.2) | -1.2 (-3.2, 0.8) | -3.7 (-7.0, -0.4) |
| Social Functioning | -1.9 (-5.1, 1.3) | -3.1 (-5.3, -0.8) | -2.6 (-6.5, 1.4) |
| Role Emotional | -0.1 (-4.9, 4.8) | -2.1 (-5.7, 1.5) | -5.3 (-11.9, 1.3) |

Results are shown after adjusting for area of residence, smoking, education, BMI and comorbidity.

## 7.5.2 Mid-age women

After adjusting for area of residence, education, smoking, BMI and comorbidity, the results are summarised in Tables 7.7 and 7.8. Compared with being a low risk drinker, women who were non-drinkers or rarely drink had significantly lower scores on all dimensions of physical health. Being a risky drinker, compared with a low risk drinker, was associated with poorer mental health and general health.

**Table 7.7 Summary of significant effects on health-related quality of life for Mid-age women 1996-2001, after adjusting for area of residence, smoking, education, BMI and comorbidity (◯ shows negative effect)**

| **Alcohol (compared with low risk drinker)** | **PCS** | **MCS** | **GH** | **BP** | **PF** | **RP** | **MH** | **VT** | **SF** | **RE** |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-drinker | ◯ | | ◯ | ◯ | ◯ | ◯ | | ◯ | ◯ | |
| Rarely drinks | ◯ | | ◯ | ◯ | ◯ | | ◯ | ◯ | ◯ | |
| Risky drinker | | ◯ | ◯ | | | | ◯ | | ◯ | ◯ |

**Table 7.8 Effects of alcohol consumption on health-related quality of life among Mid-age women, 1996-2001**
(statistically significant effects are shown in bold typeface)

| | Alcohol consumption (compared with low risk drinkers) Size of effect (95% CI) | | |
|---|---|---|---|
| **Health Outcome** | **Non-drinker** | **Rarely drinks** | **Risky drinker** |
| Physical Health Summary Score | **-2.5 (-3.0, -1.9)** | **-1.4 (-1.8, -1.0)** | 0.2 (-0.6, 0.9) |
| Mental Health Summary Score | -0.4 (-1.0, 0.1) | -0.5 (-0.9, -0.1) | **-2.2 (-3.1, -1.2)** |
| General Health | **-5.4 (-6.5, -4.3)** | **-3.5 (-4.3, -2.7)** | **-2.4 (-4.1, -0.7)** |
| Bodily Pain | **-3.2 (-4.5, -2.0)** | **-2.1 (-3.0, -1.1)** | -0.2 (-2.0, 1.7) |
| Physical Functioning | **-4.6 (-5.6, -3.5)** | **-2.9 (-3.6, -2.2)** | -0.9 (-2.2, 0.5) |
| Role Physical | **-5.2 (-7.1, -3.3)** | -2.3 (-3.8, -0.9) | -0.6 (-3.4, 2.2) |
| Mental Health | -1.2 (-2.2, -0.3) | **-1.3 (-2.0, -0.6)** | **-3.8 (-5.4, -2.1)** |
| Vitality | **-2.5 (-3.6, -1.3)** | **-2.1 (-3.0, -1.3)** | -2.2 (-3.9, -0.5) |
| Social Functioning | **-3.6 (-4.8, -2.4)** | **-2.7 (-3.6, -1.7)** | **-3.8 (-5.9, -1.7)** |
| Role Emotional | -2.5 (-4.4, -0.6) | -1.5 (-2.9, 0.0) | **-5.9 (-9.0, -2.7)** |

Results are shown after adjusting for area of residence, smoking, education, BMI and comorbidity.

## 7.5.3 Older women

After adjusting for area of residence, education, smoking, BMI and comorbidity, the results are summarised in Tables 7.9 and 7.10. Compared with being a low risk drinker, women who were non-drinkers had significantly lower scores on PCS and the eight dimensions. Women who rarely drink also had lower scores on PCS and five of the eight dimensions.

**Table 7.9 Summary of significant effects on health-related quality of life for Older women 1996-2002, after adjusting for area of residence, smoking, education, BMI and comorbidity (◯ shows negative effect)**

| Alcohol (compared with low risk drinker) | PCS | MCS | GH | BP | PF | RP | MH | VT | SF | RE |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-drinker | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Rarely drinks | ◯ | | ◯ | ◯ | ◯ | | | | ◯ | ◯ |
| Risky drinker | | | | | | | | | | |

**Table 7.10 Effects of alcohol consumption on health-related quality of life among Older women, 1996-2002**
(statistically significant effects are shown in bold typeface)

| | Alcohol consumption (compared with low risk drinkers) Size of effect (95% CI) | | |
|---|---|---|---|
| **Health Outcome** | **Non-drinker** | **Rarely drinks** | **Risky drinker** |
| Physical Health Summary Score | **-1.7 (-2.2, -1.2)** | **-1.0 (-1.5, -0.5)** | 0.0 (-1.1, 1.2) |
| Mental Health Summary Score | -0.8 (-1.3, -0.3) | -0.4 (-0.9, 0.1) | -0.3 (-1.4, 0.9) |
| General Health | **-3.9 (-5.0, -2.9)** | **-2.5 (-3.5, -1.5)** | -0.2 (-2.6, 2.2) |
| Bodily Pain | **-2.7 (-4.0, -1.4)** | **-1.9 (-3.2, -0.5)** | 1.3 (-1.7, 4.3) |
| Physical Functioning | **-5.5 (-6.7, -4.3)** | **-3.0 (-4.2, -1.8)** | -1.6 (-4.4, 1.2) |
| Role Physical | **-5.7 (-7.9, -3.5)** | -2.8 (-5.0, -0.6) | 2.8 (-1.9, 7.5) |
| Mental Health | **-1.6 (-2.4, -0.7)** | -0.9 (-1.7, 0.0) | -0.8 (-2.7, 1.1) |
| Vitality | **-2.2 (-3.2, -1.2)** | -1.4 (-2.4, -0.4) | 0.4 (-1.9, 2.8) |
| Social Functioning | **-4.6 (-5.8, -3.4)** | **-2.4 (-3.6, -1.2)** | 0.6 (-2.1, 3.3) |
| Role Emotional | **-4.5 (-6.3, -2.6)** | **-2.7 (-4.6, -0.9)** | 0.4 (-3.7, 4.5) |

Results are shown after adjusting for area of residence, smoking, education, BMI and comorbidity.

## 7.6 Summary

The association between alcohol consumption and withdrawing from the study or dying was investigated in each age group with adjustment for area of residence, education, smoking and comorbidity. The main results were:

- Younger women who were non-drinkers were more likely to withdraw from the study than low risk drinkers.
- Mid-age women who were non-drinkers or rarely drank had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers or rarely drank had a significantly higher risk of dying during the survey period than low risk drinkers.

The association between alcohol consumption and health related quality of life was investigated in each age group with adjustment for area of residence, education, smoking, BMI and comorbidity. The main results were:

(1) Alcohol consumption among the Younger women over the seven-year period was significantly associated with these health outcomes:
   - Compared with low risk drinkers, non-drinkers had poorer physical functioning and lower physical health summary scores.
   - Compared with low risk drinkers, women who remained risky drinkers had poorer mental health.

(2) Alcohol consumption was associated with many aspects of health for the Mid-age women over the five-year period:
   - Being a non-drinker or rarely drinking was associated with a reduction in all dimensions of physical health.
   - Being a risky drinker, compared with a low risk drinker, was associated with poorer mental health and general health.

(3) A strong relationship was found between alcohol consumption and health-related quality of life among the Older women:
   - Compared with being a low risk drinker, Older women who were non-drinkers also had significantly poorer health on the physical health summary measure and the eight dimensions of physical and mental health.
   - The findings for Older women who rarely drink were similar but not as strong with lower scores on the physical health summary measure and five of the eight dimensions.

# Section 8 ALSWH publications relevant to alcohol use among women

**Ball, K., W. Brown, *et al.* 2002. 'Who does not gain weight? Prevalence and predictors of weight maintenance in young women', *International Journal of Obesity* 26(12): 1570-1578.**

OBJECTIVE: To investigate the prevalence and predictors of weight maintenance over time in a large sample of young Australian women.

DESIGN: This population study examined baseline and four-year follow-up data from the cohort of young women participating in the Australian Longitudinal Study on Women's Health.

SUBJECTS: A total of 8726 young women aged 18-23 years at baseline.

MEASURES: Height, weight and body mass index (BMI); physical activity; time spent sitting; selected eating behaviours (e.g. dieting, disordered eating, takeaway food consumption); cigarette smoking, alcohol consumption; parity; and socio-demographic characteristics.

RESULTS: Only 44% of the women reported their BMI at follow-up to be within 5% of their baseline BMI (maintainers); 41% had gained weight and 15% had lost weight. Weight maintainers were more likely to be in managerial or professional occupations; to have never married; to be currently studying; and not to be mothers. Controlling for sociodemographic factors, weight maintainers were more likely to be in a healthy weight range at baseline, and to report that they spent less time sitting and consumed less takeaway food than women who gained weight.

CONCLUSIONS: Fewer than half the young women in this community sample maintained their weight over this four-year period in their early twenties. Findings of widespread weight gain, particularly among those already overweight, suggest that early adulthood, which is a time of significant life changes for many women, may be an important time to promote maintenance of healthy weight. Strategies which encourage decreased sitting time and less takeaway food consumption may be effective for weight maintenance at this stage of life.

**Bell, S. and C. Lee 2002, 'Development of the Perceived Stress Questionnaire for Young Women', *Psychology Health & Medicine* 7(2): 189-201.**

The Perceived Stress Questionnaire for Young Women (PSQYW) was developed for the Women's Health Australia project as a measure of the level and perceived sources of stress. A total of 14,779 Australian women aged 18-23 years completed the baseline survey. The PSQYW scale was shown to be internally reliable, unifactorial and to have content validity. Convergent construct validity was demonstrated most strongly with measures of mental health, life events and symptoms, and more weakly with the health behaviours of smoking and alcohol short-term risking.

There was no relationship with physical activity. Multiple regression showed that illness, physical health, mental health and life events explained 44% of the variance, with mental health explaining the most. Construct validity for the life domains indicated five factors relating to family of origin, relationships with others, own health, work/money and study.

The PSQYW was proposed to be an adequate measure of overall perceived stress and to be able to indicate broad life domain perceived stress sources for young women. Further research with broader demographic samples is proposed to enable the PSQYW to be used as a succinct method of assessing perceived stress levels and sources by GPs, and other health practitioners. (PsycINFO Database Record © 2002 APA, all rights reserved).

**Bell, S. and C. Lee 2003. 'Perceived stress revisited: The Women's Health Australia project Young cohort', *Psychology, Health and Medicine* 8(3): 343-353.**

The Perceived Stress Questionnaire for Young Women (PSQYW) was assessed for internal reliability and validity, for longitudinal changes, and for relationships with health and health behaviours. Participants in the Young cohort of the Women's Health Australia project completed the questionnaire as part of a wide-ranging survey on health and well-being in both 1996 and 2000. The 9683 women were aged between 18 and 23 years at Survey 1, and 22 and 27 years at Survey 2.

The PSQYW was shown to have reproducible internal reliability and validity. Overall stress levels increased across the four years. For individual items the largest increase in stress was in the life domain of relationship with partner/spouse, while the largest decrease was in the life domain of study. Higher levels of stress were associated with current smoking, and weekly alcohol short-term risking.

Of the health outcomes, mental health was found to have the strongest relationship with stress, with a measure of symptoms contributing some unique explanation, and physical health having only a minimal relationship. As this cohort is in the midst of the transition to adulthood future, research should include the contextual factor of life course position, with another key area for future research being the causal relationship between stress and health over time.

**Brown, W. J., A. F. Young, *et al.* 1997. 'Women's Health Australia: A health profile of mid-life rural women', *National Rural Public Health Forum: Rural Public Health in Australia 1*997, Canberra, Australia, National Rural Health Alliance.**

More than 14,000 women aged 45-50 from every state and territory are participating in the Australian Longitudinal Study on Women's Health. This study is designed to track the health of Australian women for 20 years, and to understand lifestyle and health care factors that influence women's health. The study deliberately over-represents women from rural (n = 955) and remote areas (n = 954). This early analysis of baseline data provided by the women compares responses for urban, rural and remote area women.

The data show that while rural and remote women in this age group have similar levels of self-rated health, they have significantly fewer visits to general practitioners and specialists ($p<0.001$) and more visits to alternative health care providers. Rural and remote women were also more likely to undergo gynaecological surgery than women living in urban areas ($p<0.001$).

Other results suggest that drinking and overweight are more common among rural and remote women. In the main however, the results reflect the strength and independence of rural and remote women. Further follow-up will allow divergence in health and health care equity to be explored as these women move into their older years.

**Brown, W. J., K. Ball *et al.* 1998. 'Is life a party for young women?' *ACHPER Healthy Lifestyles Journal* 45(3): 21-26.**

Baseline data for the Australian Longitudinal Study on Women's Health (now known as the Women's Health Australia or WHA project) were collected from women in three age groups (18 - 23; 45 - 50; 70 - 75) in 1996. The project aims to explore what effects changes in biological, psychological, social and lifestyle factors over time had on women's physical and emotional health. Participants in the study were randomly selected from the Health Insurance Commission/Medicare database, and represented women from all walks of life, from every State and Territory of Australia.

This paper focuses on lifestyle variables, as well as causes of, and methods of coping with stress, in the young cohort (n=14600). The most common causes of stress in this group were money, study and work/employment issues, and the most common method of coping was talking to a good friend. Almost 20% of the cohort reported eating (more or less) as a method of coping with stress, and 17% reported using exercise as a stress reduction strategy. One third of the cohort were current smokers and almost one fifth reported binge drinking (more than five drinks) at least weekly.

More than 60% of the sample reported more than one health 'risk' characteristic and multiple risks were associated with decreased physical

and mental health scores on the Medical Outcomes Survey (MOS Short Form, SF-36) Health profile. Mental health scores were very low for women who reported unhealthy eating practices and high levels of stress, and for women who reported three or more risk characteristics (33% of the cohort).

The data provide insight into levels of stress and strategies for coping with stress in young women. Associations between high stress levels, poorer mental health and multiple risk behaviours suggest that 'life is not a party' for many young women in the transition between adolescence and adulthood. The findings, which will be the focus of future work in this longitudinal study, have implications for health education and health promotion programs for young women.

**Dobson, A., W. Brown *et al.* 1999. 'Women drivers' behaviour, socio-demographic characteristics and accidents', *Accident Analysis & Prevention* 31(5): 525-535.**

The purpose of this study was to examine factors which affect driving behaviour and accident rates in women in Australia. Two groups of women (aged 18–23 and 45–50 years) participating in the Australian Longitudinal Study on Women's Health completed a mailed questionnaire on driver behaviour and road accidents. Self-reported accident rates in the last three years were 1.87 per 100000 km for the young drivers (n=1199) and 0.59 per 100,000 km for the Mid-age drivers (n=1564); most accidents involved damage only, not injury.

Mean scores for lapses obtained using the Driver Behaviour Questionnaire were similar in the two age groups and similar to those found in other studies. In contrast, scores for errors and violations for the young women were higher than for the Mid-age group and previous reports using the same instruments. Riskier driving behaviour among young women was associated with stress and habitual alcohol consumption. In the Mid-age group, poorer driver behaviour scores were related to higher levels of education, feeling rushed, higher habitual alcohol consumption and lower life satisfaction scores.

Accident rates in both groups were significantly related to lapses. Women born in non-English speaking countries had significantly higher risk of accidents compared to Australian-born women: relative risk=3.40, 95% confidence interval (1.93, 5.98) for the young drivers; relative risk=1.77, 95% confidence interval (1.11, 2.83) for Mid-age drivers. These findings support the need for road safety campaigns targeted at young women to reduce dangerous driving practices, such as speeding, 'tail-gating' and overtaking on the inside.

There is also a need for further research to understand how lifestyle characteristics are associated with higher risk of accidents and to explore factors which might account for the higher risk for women drivers who were born overseas.

**France C , Lee C & Powers J. 2004. 'Correlates of depressive symptoms in a representative sample of young Australian women', *Australian Psychologist* 39(3): 228-237.**

This paper presents a descriptive analysis of the prevalence of depressive symptoms among a national cohort of young Australian women, and the characteristics of those who experience them. It explores the associations between demographic and health-related variables and depressive symptoms in a representative sample of 9333 Australian women aged 22-27 years, from the Australian Longitudinal Study on Women's Health.

Approximately 30% of these young women indicated that they were experiencing depressive symptoms, as indicated by the CES-D 10. After adjusting for age and rurality of residence, depressive symptoms were related to the following demographic variables: low income, low educational qualifications, a history of unemployment, not being in a relationship, and living arrangements other than living with a partner. Those health-related variables which were significantly associated with depressive symptoms included frequent visits to doctors and medical specialists, and a higher number of physical symptoms experienced and diagnoses made. More illicit drug use, higher use of cigarettes and alcohol, and lower exercise status were also significantly associated with depressive symptoms.

This analysis supports the view that depression is one aspect of a multifactorial cluster of negative conditions across several domains of functioning, including physical ill-health, risky behaviours, and marginal social status. The complex interactions between these conditions, of which depression is only one, underscore the difficulties which arise in the treatment of depression and support the value of preventive interventions as an important public health strategy.

**Jonas, H. A., A. J. Dobson, *et al.* 2000. 'Patterns of alcohol consumption in young Australian women: socio-demographic factors, health-related behaviours and physical health', *Australian & New Zealand Journal of Public Health*. 24(2): 185-91.**

OBJECTIVE: To determine which socio-demographic factors, health-related behaviours and physical health conditions are associated with non-drinking, short-term risk drinking and hazardous/harmful drinking in young Australian women.

METHODS: Cross-sectional data were obtained from the baseline survey of 14,762 young women (aged 18-23 years) enrolled in the Women's Health Australia study in 1996. Associations between a range of drinking patterns and socio-demographic factors, health-related behaviours and health conditions were examined.

RESULTS: Half the women were 'low intake' drinkers, a third 'rarely drank' and 9% were non-drinkers; however, 70% reported short-term risk drinking with one-quarter of the short-term risk drinkers doing

so at least weekly. Non-drinkers were more likely than drinkers to be married, pregnant, non-smokers, born in non-English speaking countries, to live in the Northern Territory, and to have lower levels of education, employment, and private health insurance. 'Low intake/short-term risk weekly' drinkers (12%) and 'hazardous/ harmful' drinkers (5%) were more likely than 'low risk' drinkers to be unmarried; to live in shared accommodation, alone or with their parents; to live in rural or remote areas; to have ever had any sexually transmitted infection; to be current smokers or ex-smokers and to have used unhealthy weight-control practices.

CONCLUSIONS: The results confirm findings from other countries about the importance of social conditions as determinants of alcohol consumption by young women.

IMPLICATIONS: Health promotion to reduce young women's alcohol consumption needs to be carefully targeted to take account of their demography, living environment and beliefs.

**Lee, C. 1999. 'Health habits and psychological well-being among young, middle-aged and older Australian women', *British Journal of Health Psychology* 4(4): 301-314.**

OBJECTIVES: To assess health habits, and their relationship with psychological wellbeing, among Australian women; in particular to examine the relationship between health habits and the Women's Health Questionnaire (WHQ; Hunter, 1992).

DESIGN: A cross-sectional postal survey of women in three age groups was carried out.

METHODS: Questionnaire responses from a representative sample of 612 women from three age groups (18-23, 45-50 and 70-75) were analysed. Data included the WHQ, 12-item General Health Questionnaire, Medical Outcomes Study SF-12 and self-reports of smoking, height and weight, alcohol use and exercise status.

RESULTS: Young women had the highest rates of smoking and drinking and were most likely to be underweight, while middle-aged and older women were most likely to be overweight or obese. Psychological distress was highest in the youngest group; the middle-aged group were most likely to report vasomotor symptoms and difficulties with memory and concentration; and the older women difficulty in sleeping. Health habits were related to psychological well-being: smoking, unhealthy body weight and lack of exercise were most closely related to the depression subscale of the WHQ.

CONCLUSIONS: Young adulthood appears the time of greatest distress for women. Distress, particularly depression, is associated with behaviours which predispose to later disease, suggesting that psychological interventions with young women may be particularly important for long-term physical health. The WHQ appears a useful measure of well-being and a good predictor of health-related behaviour across a range of ages.

**Patterson, A. J., W. J. Brown, *et al.* 2001. 'Dietary and lifestyle factors influencing iron stores in Australian women: an examination of the role of bio-available dietary iron', *Australian Journal of Nutrition & Dietetics*, Dietitians Association of Australia. 58: 107.**

Abstract research to date has not been able to adequately describe the relative effects of dietary and lifestyle variables on iron status. While total iron intake appears unrelated to iron stores, bio-available dietary iron should correlate with iron stores after adjustment for iron losses. Therefore, the objective of this study was to examine dietary and lifestyle variables that are important in the determination of iron status for Australian women of child-bearing age. Serum ferritin was measured in 52 iron-deficient and 24 iron-replete women.

Dietary data were collected using seven-day weighed food records and bio-available dietary iron calculations were performed using the algorithms developed by Monsen *et al.*, Monsen and Balintfy, and Tseng *et al.* Self-reported data on demographic characteristics, parity, breastfeeding, oral contraceptive pill, intrauterine device and hormone replacement therapy use, menstruation, smoking, alcohol intake, exercise, dieting, vitamin and mineral supplement use and blood donation were collected. Multiple linear regression was used to examine dietary and lifestyle factors associated with serum ferritin.

Current oral contraceptive pill use and alcohol intake were positively associated (P=0.01 and P=0.001 respectively) and phytate intake was negatively associated (P = 0.05) with serum ferritin. Total iron, haem iron and bio-available dietary iron intakes were not associated with iron stores. Bio-available dietary iron estimates were well below the recommended intakes for menstruating women, suggesting possible problems with either the algorithms or the assumptions built into the current Australian recommended dietary intakes. Further work to accurately determine bio-available dietary iron estimates for Australian women is needed. (Aust J Nutr Diet 2001;58:107-113). [Abstract from author].

**Schofield, M. J., V. Minichiello, *et al.* 2000. 'Sexually transmitted infections and use of sexual health services among young Australian women: Women's Health Australia study', *International Journal of STD & AIDS* 11(5): 313-323.**

Our objective was to examine associations between self-reported sexually transmitted infections (STIs) and socio-demographic, lifestyle, health status, health service use and quality of life factors among young Australian women; and their use of family planning and sexual health clinics and associations with health, demographic and psychosocial factors.

The study sample comprised 14,762 women aged 18-23 years who participated in the mailed baseline survey for the Australian Longitudinal Study on Women's Health, conducted in 1996. The main outcome

measures are self-report of ever being diagnosed by a doctor with an STI, including chlamydia, genital herpes, genital warts or other STIs, and use of family planning and sexual health clinics. The self-reported incidence of STI was 1.7% for chlamydia, 1.1% genital herpes, 3.1% genital warts, and 2.1% other STIs. There was a large number of demographic, health behaviour, psychosocial and health service use factors significantly and independently associated with reports of having had each STI.

Factors independently associated with use of family planning clinic included unemployment, current smoking, having had a Pap smear less than 2 years ago, not having ancillary health insurance, having consulted a hospital doctor and having higher stress and life events score. Factors independently associated with use of a sexual health clinic included younger age, lower occupation status, being a current or ex-smoker, being a binge drinker, having had a Pap smear, having consulted a hospital doctor, having poorer mental health and having higher life events score.

This study reports interesting correlates of having an STI among young Australian women aged 18-23. The longitudinal nature of this study provides the opportunity to explore the long-term health and gynaecological outcomes of having STIs during young adulthood.

**Schofield, M., R. Hussain, *et al*. 2002. 'Psychosocial and health behavioural covariates of cosmetic surgery: Women's Health Australia study', *Journal of Health Psychology* 7(4): 445-457.**

Assessed current psychosocial and health behavioural covariates of past cosmetic surgery in a population-based sample (n=14,100; aged 45-50 years), from the baseline survey of the Women's Health Australia study. Seven percent (n=982) reported having ever had cosmetic surgery.

Multivariate analysis found that self-reported dieting frequency in the past year and body mass index were highly significant covariates of cosmetic surgery; perception about body weight was moderately significant, and satisfaction with body weight was unrelated. A higher likelihood of cosmetic surgery was also found for women who had ever been in a violent relationship, who had been verbally abused recently, smokers, those taking medication for sleep or nerves and those with private hospital insurance.

There were moderate associations between cosmetic surgery and state of residence, higher occupational status, alcohol use, higher stress and poorer mental health. Life satisfaction, social support, recent life events, physical health, area of residence, country of birth and marital status, though all significant at the univariate level, were unrelated in multivariate analyses. The psychological and health implications of the findings are discussed. [PsycINFO Database Record © 2002 APA, all rights reserved].

**Turner, C., A. Russell, *et al.* 2003. 'Prevalence of illicit drug use in young Australian women, patterns of use and associated risk factors', *Addiction* 98: 1419-1426.**

OBJECTIVES: To estimate the prevalence of illicit drug use in young Australian women, determine their patterns of drug use and identify associated risk factors.

METHODS: Data were collected in 2000 as part of the second survey of the youngest cohort in the Australian Longitudinal Study on Women's Health (n=9512).

RESULTS: Among women aged 22-27 years, 58% reported having used an illicit drug at some time with most (57%) having used cannabis. Amphetamines (16%), ecstasy/designer drugs (15%) and LSD (14%) were the next three most commonly used drugs. Four different patterns of drug use were identified: past users of cannabis only (39%); current users of cannabis only (17%); past multiple drug users (13%) and current multiple drug users (31%). Living in a de-facto relationship or never being married, living with non-family members, a history of physical abuse, sexual intercourse, smoking and binge drinking were significantly associated with exclusive use of cannabis and with use of multiple drugs compared to never using illicit drugs. Living with a partner, experience of sexual or emotional abuse, pregnancy, diagnosis of depression and taking sleeping medication were significantly associated with being a multiple drug user but not for exclusive cannabis use. Multiple drug users had, on average, used cannabis two to three years before using any other drug.

CONCLUSIONS: Given the strong association found between smoking, heavy drinking and drug use of varied patterns, public health initiatives targeted at preventing young women from smoking and drinking should additionally target illicit drug use.

# Appendix Questions used in the ALSWH surveys

## Questions about alcohol consumption used in the ALSWH surveys

(Young Survey 1, Young Survey 2, Young Survey 3, Mid-age Survey 1, Mid-age Survey 2, Older Survey 1, Older Survey 2, Older Survey 3)

### Frequency of alcohol consumption:

**How often do you usually drink alcohol?**

(Circle one number only)

| | |
|---|---|
| I never drink alcohol | 1 |
| I drink rarely | 2 |
| Less than once a week | 3 |
| On 1 or 2 days a week | 4 |
| On 3 or 4 days a week | 5 |
| On 5 or 6 days a week | 6 |
| Every day | 7 |

### Quantity of alcohol consumed :

**On a day when you drink alcohol, how many drinks do you usually have?**

(Circle one number only)

| | |
|---|---|
| 1 or 2 drinks per day | 1 |
| 3 or 4 drinks per day | 2 |
| 5 - 8 drinks per day | 3 |
| 9 or more drinks per day | 4 |

### Short-term risk (not asked in Older Survey 2) :

**How often do you have five or more drinks of alcohol on one occasion?**

(Circle one number only)

| | |
|---|---|
| Never | 1 |
| Less than once a month | 2 |
| About once a month | 3 |
| About once a week | 4 |
| More than once a week | 5 |

# Victorian Cancer Council's Food Frequency Questionnaire

At Survey 3 of the Younger and Mid-age women, questions on alcohol consumption were included as part of the Victorian Cancer Council's Food Frequency Questionnaire. These questions are not directly comparable with the ALSWH questions.

**65** **Over the LAST 12 MONTHS, how often did you drink beer, wine and/or spirits?**
(Mark one on each line)

**If you do NOT drink alcohol, mark here** ☐ **and go to Q68**

| | Times That You Drank | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Never | Less than once/ month | 1 to 3 days/ month | 1 day /week | 2 days /week | 3 days /week | 4 days /week | 5 days /week | 6 days /week | every day |
| **a** Beer (low alcohol) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **b** Beer (full strength) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **c** Red wine | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **d** White wine (include sparkling wines) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **e** Fortified wines, port, sherry etc | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **f** Spirits, liqueurs etc | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**When answering the next two questions, please convert the amounts you drink into glasses using the examples given below.**

**For spirits, liqueurs, and mixed drinks containing spirits, please count each nip (30 ml) as one glass.**

1 can or stubby of beer = 2 glasses
1 large bottle beer (750 ml) = 4 glasses
1 bottle wine (750 ml) = 6 glasses
1 bottle of port or sherry (750 ml) = 12 glasses

**66** **Over the LAST 12 MONTHS, on days when you were drinking, how many glasses of beer, wine and/or spirits altogether did you usually drink?** (Mark one only)

**Total number of glasses per day**

| one | two | three | four | five | six | seven | eight | nine | ten or more |
|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**67** **Over the LAST 12 MONTHS, what was the maximum number of glasses of beer, wine and/or spirits that you drank in 24 hours?** (Mark one only)

**Maximum number of glasses per 24 hours**

| 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 17-18 | 19 or more |
|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

# Notes