women's health australia

the australian longitudinal study on women's health

Mental health:

Findings from the Australian Longitudinal Study on Women's Health

Authors:
Libby Holden, Annette Dobson, Julie Byles, Deborah Loxton, Xenia Dolja-Gore, Richard Hockey, Christina Lee, Catherine Chojenta, Nicole Reilly, Gita Mishra, Deirdre McLaughlin, Nancy Pachana, Leigh Tooth and Melissa Harris.

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Major Report H

Mental Health: Findings from the Australian Longitudinal Study on Women's Health

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KEY MESSAGES

- An increase in detection and management of mental health disorders has occurred over time. There has been a steady increase in the use of *Better Access Scheme* (BAS) Medicare items since their introduction in 2006, with data suggesting a substantial decrease in unresolved poor mental health for younger and mid-aged women. However, unresolved poor mental health has not similarly reduced in older women, who do not appear to be using BAS services to the same extent.
- ALSWH data suggest that a variety of *socio-demographic factors* impact on the mental health of women over time. For example, lower education and not managing on available income were associated with greater risk of psychological distress for all cohorts.
- A variety of *lifestyle factors* impact on the mental health of women over time. For example, smoking was implicated in mental health issues; poor mental health was associated with subsequent smoking and smoking was associated with subsequent poor mental health.
- *Social support* is important for maintaining mental health; however, mental health also affects the nature and quality of interactions with friends and family. Poor social support can lead to poor mental health and likewise poor mental health can lead to poor social support.
- Poor mental health in the *perinatal period* (pregnancy and first year after birth) is associated with a history of poor mental health and other factors, including lower educational attainment and being of non-English-speaking background. However, only about half of women were asked about their mental health history by health care providers in the antenatal period, and only 43% were asked in the postnatal period. Those in public hospitals were more likely to be assessed than those in private hospitals.
- *Carers* experience poorer mental health than non-carers. Those who provide live-in care have particularly poor mental health.
- *Mental and physical health* interact and affect each other in reciprocal ways. For example, a history of mental health problems was predictive of subsequent cardiovascular disease and associated with subsequent onset of diabetes in older women.
- Individuals in a population experience a variety of life events, which may only be partially within their control. ALSWH data suggest that a variety of *life events and their timing* impact on the mental health of women over time. For example, women who had their first child at an early age experienced ongoing poor mental health. Also, for widowed women, mental health is lowest within the first year following the death of spouse, but returns to pre-loss levels after four years.

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1 Executive Summary

The Australian Longitudinal Study on Women's Health (ALSWH) has been collecting data on three generations of Australian women since 1996. When recruited, the women were aged 18-23 years (born 1973-78, now aged 35-40 years), 45-50 years (born 1946-51, now aged 62-67 years) and 70-75 years (born 1921-26, now aged 87-92 years). This nationally representative group of approximately 40,000 women was recruited from the Medicare database. Where consenting, there is data linkage to Medicare and Pharmaceutical Benefits Schemes. Written surveys have been collected at approximately three-year intervals from each generation of women with questions tailored to the cohort's age at the time of each survey. To date there are six waves of data available from the cohorts born in 1946-51 and 1921-26 and five waves of data available from the cohort born in 1973-78. A new young cohort of women aged 18-23 years, is currently being recruited to provide data on the next generation of Australian women. Longitudinal data such as these provide an opportunity to explore causal pathways of health outcomes among Australian women.

ALSWH is funded by the Australian Government Department of Health and Ageing. The study is conducted collaboratively by researchers based at the University of Queensland and the University of Newcastle. Suggestions on the directions of the study are provided by a Project Advisory Committee appointed by the Department of Health and Ageing. Examples of previous reports are 'Rural, remote and regional differences in women's health' and 'Women's health and ageing'. Detailed information about the study and all the surveys can be found at http://www.alswh.org.au/.

This report uses data from the cohorts born 1973-78, 1946-51 and 1921-26 to explore patterns of mental health among Australian women as well as their use of mental health services. It includes analyses of factors associated with poor mental health as well as specific areas such as perinatal mental health, interpersonal relationships and mental health, and comorbidity of physical and mental health. Key findings are outlined below with more detailed results and discussion provided in each chapter.

Patterns of prevalence of poor mental health

- The prevalence of psychological distress and other measures of poor mental health is highest in younger women, and decreases with age except in later old age where it increases slightly.
- Many women experience ongoing good mental health (57%, 66%, and 80% for the young (born 1973-78), mid-aged (born 1946-51) and older (born 1921-26) cohorts respectively). For other women, mental health fluctuates over time, with few women having poor mental health at each survey (approximately 1% for each

cohort). Many women who experienced an episode of poor mental health also experienced a relapse at a later time period. (38%, 31%, and 16% for the young, mid-aged and older cohorts respectively).

- In the years from 1998-2010 the detection and treatment of depression increased from 13% to 18% in the younger cohort, 9% to 12% in the mid-aged cohort and 4% to 6% in the older cohort.
- Similarly, the percentage of women with undetected or unresolved psychological distress reduced from 48% to 24% for the younger cohort and 44% to 23% for the mid-aged cohort. However among older women, there was an initial drop consistent with the pattern seen among the other cohorts but this benefit is lost in later years.
- Anxiety symptoms are more prevalent than depressive symptoms across age cohorts. Co-morbid anxiety and depression are also evident, again for all ages. However, ALSWH data suggest that diagnosis and treatment is less common for those reporting anxiety than for those experiencing depression.

Mental health service use

- There has been a steady increase in the use of Better Access Scheme (BAS) Medicare items since the scheme's introduction in 2006.
- By December 2010, around 18% of the 1973-78 cohort, 10% of the 1946-51 cohort, and 3% of the 1921-26 cohort had claimed for at least one BAS Medicare item.
- Women in the 1973-78 and 1946-51 cohorts who used the BAS were more likely to have private health insurance compared with women who reported a diagnosis of depression/ anxiety but were not treated under the BAS. For women in the 1921-26 cohort, those treated under BAS were less likely to have a pension card.

Socio-demographic characteristics and health behaviours correlated with poor mental health

- Women with poor mental health were more likely to have lower education and difficulty managing on available income. Work force non-participation and not being in a relationship were also significantly associated with poor mental health among mid-aged women and younger women, as was studying for young women.
- Health behaviours associated with poor mental health were: smoking, lower levels of physical activity, excessive alcohol consumption and being underweight or obese. A 'Mediterranean-style' diet, consisting of vegetables, garlic etc., was associated with better mental health compared with diets high in meat, dairy products, fats and sugars.

Perinatal mental health

- Close to half the women from an ALSWH sub-study on pregnancy and mental health had a health assessment during the perinatal period (time from conception to 12 months after birth). Those less likely to have a mental health assessment were

women with a previous birthing history, those with a lower education, in private hospital care or from a non-English speaking background. Women who were asked about their mental health history were more likely to be referred to support services.

- Women with an increased risk of postnatal depression were more likely to have experienced antenatal or birth-related anxiety or depression, to have a history of perinatal anxiety and/or depression or to have experienced postnatal anxiety related to that pregnancy.

Interpersonal relationships

- Among the 1973-78 cohort, women who experienced intimate partner violence had a greater chance of experiencing poor mental health. Similarly, women with poor mental health had a greater chance of later experiencing intimate partner violence.
- Among the 1946-51 cohort, women who ceased living with a violent partner experienced improvements in mental health. However, they continued to have poorer mental health than women who had never experienced intimate partner violence. Sub-optimal mental health continued even 12 years after the violent relationship had ended.
- Carers of people with a long-term illness or disability had poorer mental health than non-carers. This was the case regardless of how intensive the care requirements or whether the care was intermittent. Those who provided live-in care had worse mental health than those not living-in. Mid-aged carers were asked additional questions which revealed that carers who remained in the workforce and/or had strong social support had better mental health.
- Poor social support can lead to poor mental health and poor mental health can lead to poor social support. The lowest level of social support was associated with the highest chance of poor mental health. Many of the characteristics associated with poor mental health are also associated with poor social support. Levels of social support change over time for most women. Characteristics most strongly associated with subsequent poor social support were: not being in an intimate relationship, difficulty managing on available income and for young women, study with or without also working.

Life stages

- Socially normative timing of motherhood was associated with better mental health; that is early motherhood or delaying the decision to become a mother was associated with poorer mental health.
- Few women experience poor mental health during the menopausal life stage. Of those who do, most had only a moderate probability in either the early or late phases, whereas those experiencing a high probability of poor mental health had an ongoing high probability even prior to the menopausal life stage.

- Widows experienced a decline in mental health up to 4 years prior to the death of their spouse, with the lowest mental health experienced in the year immediately after their loss. Within four years of their loss their mental health had returned to pre-loss levels.

Physical and mental health co-morbidity

- A history of mental health problems is predictive of subsequent cardio-vascular disease in both mid-aged and older women with increased risk of heart disease following anxiety and/ or depression in mid-aged women and stress in older women.
- There is increased risk of stroke after depression in both mid-aged and older women.
- Both diabetes and arthritis are associated with previous poor mental health.

2 Introduction

2.1 What is mental health?

Mental health is an essential component of overall health. The World Health Organisation (WHO) constitution states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." An important consequence of this definition is that mental health is described as more than the absence of mental disorders or disabilities.

Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this positive sense, mental health is the foundation for individual well-being and the effective functioning of a community.' WHO Mental Health Fact Sheet September 2010 (http://www.who.int/mediacentre/factsheets/fs220/en/index.html)

'Mental health' refers broadly to a positive state of emotional wellbeing which enables a person to participate and engage with work, family and community. In practice, research and policy have tended to focus on indicators of mental ill-health, but there is increasing interest internationally in population-wide approaches to the active enhancement of positive well-being. For example, the United Kingdom Office for National Statistics is developing strategies for measuring positive subjective wellbeing and relating it to social, economic and health service indicators (Office for National Statistics, 2012) and the concept of 'gross national happiness' continues to receive a level of popular interest (see http://www.grossnationalhappiness.com/).

Summarising what is known about mental health in Australia is constrained by the fact that our sources of data focus almost exclusively on mental ill-health and is further complicated by a lack of consistency in measures and approaches used. Some sources of information focus on diagnosed depression or anxiety, or on use of mental health services or medication, while others use self-reported symptoms or the reports of informants.

However, research shows that the predictors and correlates of different indicators of mental ill-health are very similar. For example, although depression and anxiety are separate clinical conditions, they are both associated with physical illness, drug and alcohol use, stressful life events, lack of social support and low socioeconomic position (Bijl et al., 1998). Depression

and anxiety are also highly co-morbid across the lifespan (Merikangas et al., 2003). Thus, the different diagnoses may be thought of as indicators of disadvantage and of social and economic exclusion. This means that although the conditions themselves differ, public health initiatives that target drug and alcohol use, social inclusion, and social mobility are likely to affect all indicators of poor mental health.

Mental health problems – specifically anxiety and depression - have been identified as the largest single contributor to disability adjusted life years lost amongst Australian women and the third largest amongst Australian men (AIHW, 2010). This burden reflects the combination of economic and social losses resulting from premature mortality, and from morbidity-related effects including unemployment or under-employment and reduced quality of life. It should be noted that this estimate does not include other costs, such as the direct costs of mental health service provision and government benefits. Nor does it consider a range of indirect costs to other individuals and to the community at large. These include:

- Indirect costs to carers, including employment and educational opportunities foregone, direct costs associated with caring, and personal costs including stress and depression (Access Economics, 2010; AIHW, 2004).
- Costs to other sections of government such as social services, public housing, law enforcement, justice and corrections (see AIHW, 2012a; Australian Institute of Criminology, 2012).
- Costs associated with the interactions between mental and physical illness, such as the role of mental health problems as predictors of incidence, severity and extent of health service use in national health priority conditions such as heart disease, diabetes and stroke (e.g., Clarke & Currie, 2009).
- Long-term health costs resulting from high rates of smoking and other risk behaviours amongst individuals with diagnosed mental ill-health; the evidence that smoking is both a predictor and a consequence of mental ill-health is overwhelming (e.g., Action on Smoking and Health, 2011; Leung et al., 2011).

Life expectancy amongst people with mental illnesses has been estimated at between eight (Demblin et al., 1998) and twenty (Tiihonen et al., 2009) years less than the general population, depending largely on the particular group studied. Although psychiatric patients have elevated risk of death from suicide, drug overdoses and other external causes, research consistently finds the most common causes of death for people with mental illnesses are the same as those in the wider population: cancers and circulatory conditions. A recent meta-analysis of population-based studies (Russ et al., 2012) has shown that even sub-clinical levels of subjective distress are associated with a more than 20% greater risk of death from cardiovascular disease. The most significant factor underlying this reduced life

expectancy has been identified as cigarette smoking, which is higher in psychiatric populations than in almost any other population subgroup (Prochaska, 2011).

Recent policy and practice in Australia approach these issues in relation to mental health in two complementary ways. Increased provision of mental health services in primary health care - including the relatively new Medicare items for mental health services delivered by GPs, psychologists and other professionals - aim to provide appropriate treatment to individuals with diagnosable levels of mental ill-health (AIHW, 2012b). At the same time, broad-based health promotion campaigns, many in partnership with non-government organisations such as *beyondblue*, aim to de-stigmatise mental ill-health and encourage help-seeking and community openness about mental health issues.

Section 2.2 summarises what is already known about risk factors and predictors of mental health conditions and Section 2.3 discusses use of mental health services in Australia. Following this, Section 2.4 discusses some possible reasons underlying the observed differences between men and women. A description of the Australian Longitudinal Study on Women's Health (Section 2.5) and details of the various indicators of poor (and good) mental health and their use in this report (Section 2.6) are also included.

2.2 What is already known about mental health?

This section summarises demographic and other factors that are associated with mental health. Most of these indicators appear to have causal relationships that are inter-connected with mental health: for example, unemployment tends to lead to poor mental health and poor mental health makes it difficult to find and keep work. This association suggests that prevention is particularly important in the community-wide promotion of mental health: preventing people from entering a spiral of disadvantage may be more cost-effective than treating established problems, although treatment and rehabilitation are also necessary.

However, the majority of this evidence is cross-sectional or collected over a relatively short time span and usually is restricted to only a small subset of the potentially relevant information about study participants. The Australian Longitudinal Study on Women's Health is particularly powerful, in having seventeen years of linked longitudinal data on a large population-based sample of Australian women and in having access to a wide range of self-report and administrative information at an individual level.

2.2.1 Age and sex

Regular national cross-sectional surveys conducted by the Australian Bureau of Statistics provide data on the prevalence and correlates of poor mental health in Australia. The most recent survey (ABS, 2011-12) shows that 13.6% of Australians (3.0 million) reported having a mental and behavioural condition, an increase from 11.2% in 2007 and 9.6% in 2001. Women continue to experience higher rates of poor mental health (15.1%) compared with men (12.0%) (ABS, 2012). In 2011-12, 12.7% of women experienced high or very high psychological distress (measured using the Kessler 10 Scale) compared with 8.8% of men (ABS, 2012). More detailed mental health results from the 2011-12 survey have not yet been released but the 2008 ABS data shows that women experienced higher rates than men of anxiety disorders, which included generalised anxiety, phobias and post-traumatic stress disorder (18% and 11% respectively) and affective disorders, including depression (7.1% vs. 5.3%). However, men had a higher rate (7.0% vs. 3.3%) of substance use disorders (ABS, 2008). This gendered pattern is consistent across countries for diagnosable mental illness, high levels of distress, mental health service use, or use of medications. Possible reasons for the strong and consistent gender differences in mental health are discussed in Section 2.4.

Poor mental health becomes more prevalent with age up until the late 20s or early 30s after which it drops steadily and is at its lowest in older age, with a slight increase in prevalence in the few years before death (ABS, 2008). Peak ages for initial diagnosis of most mental illnesses are from teens to around 30. On the basis of a review of evidence from WHO Mental Health Surveys from around the world, Kessler et al. (2007) concluded that roughly half of all lifetime mental disorders have their onset by the mid-teens and three-quarters by the mid-20s; later-onset diagnoses are mostly preceded by a history of disorder which may not have been severe enough to attract a diagnosis.

2.2.2 Other demographics

There is robust evidence associating higher levels of good mental health amongst both women and men with high levels of social support and particularly with being in a committed long-term relationship (ABS, 2008). Longitudinal evidence shows that people in better mental health are more likely to find partners and that being in a relationship serves to enhance mental health (e.g., Simon, 2002). Unsurprisingly, loss of a partner, whether by widowhood or separation, is associated with reduced mental health.

The National Survey of Mental Health (ABS, 2008) confirms widespread evidence that education and employment are related to mental health. In particular, those with the lowest levels of education and those who are unemployed, tend to have poorer mental health (ABS, 2008). Being out of the labour force is associated with poor mental health for men but the association is less marked for women (ABS, 2008), since many women who are

out of the workforce are voluntarily caring for children or other family members (ABS, 2012).

Other indicators of socioeconomic position including both individual indicators and area-level indicators such as the ABS Socio-Economic Indicators for Area (SEIFA) are also strongly associated with poor mental health (ABS, 2008).

2.2.3 Physical health and health behaviours

Chronic physical illness, disability and chronic pain are all closely associated with poor mental health (World Federation for Mental Health, 2004). Again, there is evidence for a pattern of causation that is inter-connected with mental health; that is, 'A' influences 'B' and 'B' influences 'A'. Poor physical capacity, pain and disability predispose to poor mental health, but also, poor mental health tends to predispose to major illnesses, including heart disease, diabetes and arthritis. In addition, patients with poor mental health frequently have difficulty complying with treatment regimes, often lack confidence in health care providers and frequently experience worse physical outcomes (Canadian Mental Health Association, 2008). Poor mental health can also contribute to neuropathic pain.

A number of health-related behaviours are also associated with poor mental health. Smoking, alcohol abuse and cannabis use are strongly associated with mental illness; again, these health behaviours increase the risk of developing depression and anxiety (and in the case of cannabis, psychosis), while individuals with poor mental health have high rates of self-medication with such substances (Degenhardt et al., 2001). There is also good evidence that exercise has at least transient positive effects on mood, although the evidence on its capacity to alleviate severe mental illness is less convincing (Whitelaw et al., 2008). There is also strong evidence linking childhood abuse and neglect and the experience of violence in adulthood, to substance abuse and to poor mental health (Bromfield, 2010).

This summary of findings clearly supports the view that mental health effects and is affected by many aspects of individual lifestyle, physical health and health behaviours; family and social relationships; socioeconomic status; and economic participation. These findings all suggest that poor mental health is a significant barrier to full participation in the social and economic life of Australia.

2.3 Primary care mental health services in Australia

The introduction in November 2006 of Medicare Benefits Schedule (MBS), subsidised mental health services provided by GPs and by specialists (psychiatrists, psychologists, social workers and others) in primary care, has substantially extended mental health services

beyond the longer-standing provision of emergency and inpatient psychiatric services, long-term residential care and psychiatric disability services.

AIHW (2012) calculated that, of the estimated 3 million adult Australians experiencing symptoms of a mental disorder in 2010, around 1.7 million received public or private mental health services. Since the introduction of the GP Mental Health Treatment Medicare items in 2006, there has been an average annual growth rate in GP mental health services of 17%, with depression, anxiety and sleep disturbances the most common reasons for treatment. Women and those over 65 are more likely to seek treatment than others (COAG, 2006).

For MBS subsidised specialised mental health-related services, also introduced in 2006, the annual growth rate has been 18% (COAG, 2006). These services were provided by psychologists, psychiatrists and other health care providers to over 900,000 patients in 2010-2011, with women and those aged 35-44 most likely to access these services.

Use of MBS subsidised mental health services is growing, but it is still the case that a large proportion of Australians with mental health problems do not access treatment.

2.4 Sex and gender

In considering factors underlying differences between women's and men's health, it is usual to distinguish between sex differences - those which are biological, and gender differences, those which result from social expectations, roles and structures that differ for women and for men. The evidence generally supports a gender-based, rather than a sex-based explanation of differences in mental health: that is, these differences lie in the different social roles and cultural expectations of men and women (WHO, 2012). Throughout this report, the term 'gender' is used unless referring to a specifically biological phenomenon, in which case the term 'sex' is used. Factors associated with women's higher rates of depression and anxiety include poverty, discrimination, and socioeconomic disadvantage; insecure, low-status employment; gendered expectations of high levels of unpaid domestic labour and caregiving; and differential exposure to physical and sexual violence in domestic settings (WHO, 2012).

Although historically it was believed that women's reproductive-related physiology, including menstruation, pregnancy, childbirth and menopause, was the cause of higher levels of emotional distress, contemporary evidence shows that there are no clear biological pathways between reproductive and psychological health. Rather, menstrual-related distress, ante- and post-natal depression, and midlife distress have been convincingly associated with lack of social support, major life events, and previous episodes of depression (Ussher, 2010).

Even in the context of pre- and post-natal depression, where biological explanations for emotional distress may appear appropriate, there is no evidence for a biological basis to depression. Current research suggests that the strongest predictors of post-natal depression are previous experience of depression, lack of social support and the occurrence of major negative life events (Ussher, 2010).

A further introductory issue is the importance of acknowledging diversity of sexual orientations. Whilst the majority of women in the ALSWH describe themselves as exclusively heterosexual, those women who identify as bisexual or lesbian experience significant mental health challenges. It is beyond the scope of this report to examine the role of sexual orientation in detail. However, published research from ALSWH does support the common finding that women who identify as other than exclusively heterosexual are likely to experience poorer mental health, and higher levels of illicit drug use, smoking and obesity than do other women (Hillier et al., 2004; McNair et al., 2011).

2.5 Australian Longitudinal Study on Women's Health

This report uses data from the Australian Longitudinal Study on Women's Health (ALSWH) to examine women's mental health. The ALSWH is a longitudinal population-based survey funded by the Australian Government Department of Health and Ageing. The project began in 1996 and involves three large, nationally representative, cohorts of Australian women representing three generations:

- the 1973-78 cohort, aged 18 to 23 years when first recruited in 1996 (N=14,247) and now aged 35 to 40 years in 2013
- the 1946-51 cohort, aged 45 to 50 years in 1996 (N=13,716), now aged 62 to 67 years in 2013
- the 1921-26 cohort, aged 70 to 75 years in 1996 (N=12,432), now aged 87 to 92 years in 2013

A new cohort of women aged 18 to 23 years is currently being recruited; however, these data are not yet available and so are not included in this report. The women in the existing cohorts have now been surveyed at least six times over the past 17 years, providing a large amount of data on their health, lifestyles, and use of health services. The schedule of surveys is shown in Table 2-1 as well as the number of participants in each cohort and their age in years at each survey.

Table 2-1 Schedule of ALSWH surveys, age in years and number of participants in each cohort

Survey	1973-78 cohort	1946-51 cohort	1921-26 cohort
Survey 1	1996 Age 18-23 N=14 247	1996 Age 45-50 N=13 715	1996 Age 70-75 N=12 432
Survey 2	2000 Age 22-27 N=9688	1998 Age 47-52 N=12 338	1999 Age 73-78 N=10 434
Survey 3	2003 Age 25-30 N=9081	2001 Age 50-55 N=11 226	2002 Age 76-81 N=8647
Survey 4	2006 Age 28-33 N=9145	2004 Age 53-58 N=10 905	2005 Age 79-84 N=7158
Survey 5	2009 Age 31-36 N= 8200	2007 Age 56-61 N=10 638	2008 Age 82-87 N=5561
Survey 6	2012 Age 34-39 *N=7582	2010 Age 59-64 N = 10 011	2011 Age 85-90 N=4055
Survey 7	↓ 2015 Age 37-42	↓ 2013 Age 62-67	↓ 2012 6-month follow up surveys N = 3428 (Wave 1) N = 3126 (Wave 2)

**Survey intake will be finalised in 2013.*

All study participants completed written surveys at Survey 1 (1996). At Survey 2, attrition was highest among young women, primarily due to many of them not being contactable. Survey 1 data were used to describe characteristics of study participants who were more likely to not participate at some or all later surveys. From this it is known that non-responders were more likely to have lower education, be from a non-English speaking background, be a current smoker, experience poorer health and have greater difficulty managing on their available income (Young, 2006). A study of response patterns at later surveys shows a 'healthy survivors' effect. That is, women with poor mental health were more likely to drop out of the study (Lucke, 2010). Table 2-2 compares patterns of non-participation at later surveys for those women with and without psychological distress at Survey 1. Across all cohorts, women with psychological distress at Survey 1 were less likely to participate in subsequent surveys than those without psychological distress at Survey 1. This needs to be considered when interpreting the findings of this report as the prevalence of poor mental health is likely to be under estimated due to this pattern of non-participation.

Table 2-2 Comparison of non-participation in subsequent surveys for women with and without psychological distress at Survey 1; percentages

	1973-78 Cohort N=14,247		1946-51 Cohort N=13,715		1921-26 Cohort N=12,432	
Non-participation*	Psychological distress at S1 3090 (22%)	No psychological distress at S1 11126 (78%)	Psychological distress at S1 2094 (15%)	No psychological distress at S1 11498 (85%)	Psychological distress at S1 1235 (10%)	No psychological distress at S1 10827 (90%)
Survey 2	36	31	15	9	19	11
Survey 3	41	35	25	16	30	19
Survey 4	42	34	26	18	33	24
Survey 5	48	41	28	18	31	27
Survey 6	-	-	33	22	29	28

*Excluding non-participation due to death.

2.6 Measuring and defining mental health

The Australian Longitudinal Study on Women's Health uses several different measures of mental health status; all are self-reported. Some questions ask if a woman has been diagnosed or treated for a mental health condition such as depression. Others measure current symptoms of poor mental health using validated scales indicative of having a clinically diagnosable mental health condition. The measures are explained in more detail below and in Appendix B.

2.6.1 Diagnosed or treated for a mental health condition

At each survey, women are asked whether they have been 'diagnosed or treated for' a number of physical and mental health problems, including depression and anxiety in the previous 3 years (i.e., the period of time since the previous survey). Studies that compare reliability of self-reported health conditions with medical records have reported self-report data to have varying levels of accuracy (Martin, 2000; Oksanen, 2010; Smith, 2008). Self-report is more accurate for prevalence than incidence (Smith, 2008) and the level of accuracy depends on the condition (Oksanen, 2010).

Compared with electronic medical records, self-reported depression ranked third highest in accuracy out of 38 self-reported health conditions (Smith, 2008).

2.6.2 Validated measures of mental health

Current psychological distress: At each survey women are asked to complete a series of questions to measure their health-related quality of life with a commonly used scale known as the SF-36 (Ware et al., 1993). One of the subscales of the SF-36 is the five-item mental health index (referred to as the SF-36 MHI). The five items are used to generate a score of 0 to 100 with higher scores indicating better mental health (Rumph, 2001). We applied the commonly used cut-point of ≤ 52 to categorise women as having psychological distress (Holmes, 1998; Silveira, 2005).

Current depressive symptoms: The 10-item version of the Center for Epidemiological Studies Depression Scale (CESD-10) was used to measure current depressive symptoms (Andresen, 1994). This scale was developed specifically for use in self-report surveys with population samples and is widely used in epidemiological research (Andresen, 1994; Radloff, 1977). A cut-point of ≥10 was used to measure symptoms indicative of a clinical diagnosis of depression (Andresen, 1994).

Current anxiety symptoms: The Goldberg Anxiety and Depression Scale (GADanx) anxiety subscale was used to measure current symptoms indicative of an anxiety disorder (Goldberg, 1988). This scale was designed for use by non-psychiatrists and in community surveys. A cut-point of five is used with a score greater than five indicating an anxiety disorder.

A summary of the availability of data from each measure in ALSWH surveys is given in Table 2-3. All the measures describe poor mental health (i.e., mental ill-health), NOT positive mental health. Not all measures have been included in each survey. Only a limited number of questions were asked in Survey 1.

Table 2-3 Measures used in this report for each cohort (women born 1973-78, women born 1946-5 and women born 1921-26)

	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6*
SF-36 MHI	All cohorts	All cohorts	All cohorts	All cohorts	All cohorts	1946-51 cohort 1921-26 cohort
CESD-10		All cohorts	1973-78cohort 1946-51 cohort	1973-78cohort 1946-51 cohort	1973-78cohort 1946-51 cohort	1946-51 cohort
GADanx			All cohorts	All cohorts	All cohorts	1946-51 cohort 1921-26 cohort
Diagnosed or treated depression		All cohorts	All cohorts	All cohorts	All cohorts	1946-51 cohort 1921-26 cohort
Diagnosed or treated anxiety		All cohorts	All cohorts	All cohorts	All cohorts	1946-51 cohort 1921-26 cohort

*These measures were also used for Survey 6 of the 1973-78 cohort, but the data were not available for this report.

It should be noted here that the cut-points used to define the likelihood of a clinically meaningful mental health condition are based on the available evidence. The cut points for the CESD-10 and the anxiety subscale from the GADanx have not been extensively validated against a clinical diagnosis. However, these tools were selected because they focus specifically on depressive disorders or anxiety disorders while the broader measure of psychological distress (SF-36 MHI) does not.

While all available measures are used to report mental health status, we focus on the SF-36 Mental Health Index 5-item subscale (SF-36 MHI). This measure has been widely used in epidemiological studies for several decades as a broad measure of poor mental health. Therefore, much of this report features the SF-36 MHI which has a range of 0-100, with a high score indicating good mental health. In some sections of this report the mean score is presented, while in other sections a cut-point of ≤52 is used to indicate those with poor mental health. This cut-point has robust evidence of being conservatively within the bounds of a clinically meaningful indicator of psychological distress (Rumpf, 2001). In sections where the cut-point of ≤52 is used, the percentage of women meeting the criterion for psychological distress is being reported; therefore, a high percentage is indicative of poor mental health for that group.

CESD-10 has not been used for the older cohort as it performed poorly when pilot tested in this group, with considerable missing data.

Missing data may occur for several reasons; for example, women may not respond to a whole survey then respond to the next survey, resulting in data missing for a whole survey. Alternatively missing data can occur when a woman completes most of the survey but skips some questions. For example, often the question on weight is not completed, resulting in much data missing for BMI. Another possible cause of missing data is when women drop out of the study; for example, women may move without giving a forwarding address and not be traceable through their designated contacts (i.e., they are lost to follow-up). Missing data complicates the analysis of changes in patterns of mental health over time. Where possible we have included all available data and at the start of each chapter there is an explanation of which data have been included.

2.7 Report structure

Chapter 3 of this report explores patterns of prevalence of mental health and how these change over time, including how levels of diagnosis and treatment have changed. Chapter 4 looks at health service use in relation to mental health. Chapter 5 summarises associations between mental health for a range of factors, including patterns of association that are inter-connected; that is, where ‘A’ affects ‘B’ and ‘B’ affects ‘A’.

The rest of the report focuses on specific topics related to mental health. Chapter 6 covers perinatal mental health including which women receive psychological assessments during the perinatal period. Chapter 7 looks at interpersonal relationships and mental health, including intimate partner violence, carer’s mental health, and the relationship between social support and mental health more generally.

Chapter 8 describes mental health in relation to several life events common to women at various stages in the life cycle. Such events include the timing of motherhood, menopause, and widowhood. Chapter 9 discusses mental and physical health co-morbidity using longitudinal data to explore the relationship between several high priority health conditions and poor mental health.

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3 Patterns and prevalence of mental health problems

3.1 Introduction

Nearly half (45.5%) of Australians experience a mental health disorder at some time in their life, and women are more likely than men to experience mental health disorders (Slade, 2009). Depression and anxiety are the most common mental health disorders and the leading causes of non-fatal burden of disease in Australia (Slade et al., 2009; Beggs et al., 2007). Depression has been well recognised in the community as a major mental health concern thanks to organisations such as *beyondblue* and the Black Dog Institute. However, anxiety is also recognised as a priority mental health condition. At the time of the 2007 National Survey of Mental Health and Wellbeing, one in sixteen Australians had mood disorders such as depression whereas one in seven had anxiety disorders (Slade et al., 2009). Based on these prevalence rates nearly one million Australians had affective disorders (depressed mood) and over 2.3 million had anxiety disorders; women are more likely than men to experience symptoms of anxiety (Slade et al., 2009).

This section looks at prevalence of poor mental health and then examines how mental health has changed over time for all three cohorts of Australian women in the ALSWH. The advantage of longitudinal studies such as ALSWH is that they can follow the health status and life circumstances of the study participants over time. This adds a depth of understanding not available through cross-sectional studies, which only collect data on a sample of study participants at one point in time, such as the National Survey of Mental Health and Wellbeing.

Only women with data available at all surveys are included in the figures in Section 3. See Appendix D for a comparison of mental health for women with data at all surveys and for women with data at any survey. Prevalence levels depend on cut-points used for the Center for Epidemiologic Studies of Depression scale (CESD-10), the Goldberg Anxiety and Depression Scale anxiety subscale (GADanx), and the SF-36 Mental Health Index 5 item subscale (MHI). These are self-report survey tools and therefore prevalence levels obtained may differ from other measures, such as the Composite International Diagnostic Interview (CIDI), which is an interview-based tool used in the National Mental Health and Well-being survey (Slade et al., 2009).

3.2 Prevalence of poor mental health

3.2.1 Anxiety alone and depression alone, and co-morbid anxiety and depression

The proportion of women with anxiety, depression or both conditions is presented in Figure 3-1, using the CESD-10 to measure depressive symptoms and GADanx to measure anxiety symptoms. The first three bars on the left use data from three consecutive surveys (Surveys 3 - Survey 5, conducted in years 2003, 2006, and 2009) from the younger cohort (born 1973-78) and the three bars on the right use data from three consecutive surveys (Survey 4 - Survey 6, collected in years 2004, 2007, and 2010) from the mid-age cohort (born 1946-51). Comparable data have not been collected for the older cohort (born 1921-26). The green portion in each bar indicates women with neither anxiety nor depression; the mauve portion indicates those with anxiety only; the purple portion indicates those with depression only and the black portion indicates those with comorbid anxiety and depression. The prevalence of either mental health symptom decreased with age. Among both cohorts anxiety was more common than depression alone.

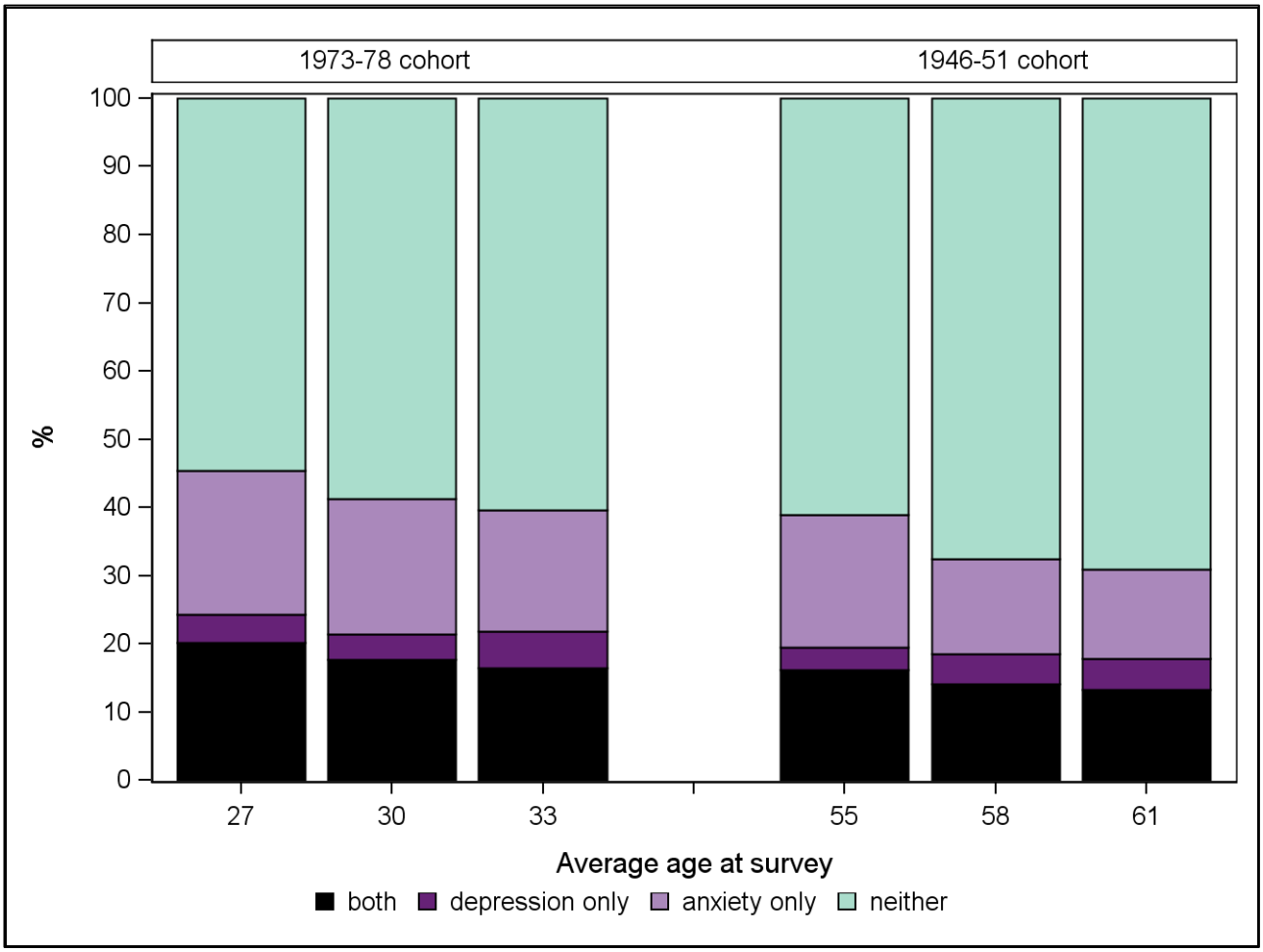

Figure 3-1 Percentage of women with anxiety only, depression only, both or neither; using CESD-10 to measure depressive symptoms and the GADanx to measure anxiety symptoms. Data for ages 25-36 years are from three consecutive surveys of younger cohort; and ages 53-64 are from three consecutive surveys of the mid-aged cohort.

3.2.2 Mental health in the last 4 weeks

The validated SF-36 Mental Health Index 5-item subscale (SF-36 MHI) is used to assess the mental health of respondents in the four weeks prior to each survey. The scale has a range of 0-100, with higher scores indicating better mental health. Figure 3-2 shows the mean SF-36 MHI score by average age for each cohort. The first point on the left is the mean mental health score for the young cohort (born 1973-78) with an age range at Survey 1 (1996) of 18-23 years, plotted at average age of approximately 20 years. The next point on the left is the mean mental health score for the young cohort with an average age plotted at approximately 24 years at Survey 2 (2000). The points 3rd, 4th and 5th from the left are the subsequent mean mental health scores for the cohort at average ages of 27, 30 and 34 years (i.e., at Survey 3 [2003], Survey 4 [2006], and Survey 5 [2009]). The middle set of data points are mean mental health scores for the mid-aged cohort (born 1946-51) who had an average age of approximately 47 years at Survey 1 [1996] and approximately 62 years at Survey 6 [2010]. These 6 points represent the mean mental health scores for the mid-aged cohort at each survey. The last 6 points are the mean mental health scores for the older cohort (born 1921-26) with an average age of approximately 72 years at Survey 1 [1996] and approximately 87 years at Survey 6 [2011]. The graph demonstrates that mental health generally improves with age, except that in later old age (80+ years) mental health appears to deteriorate.

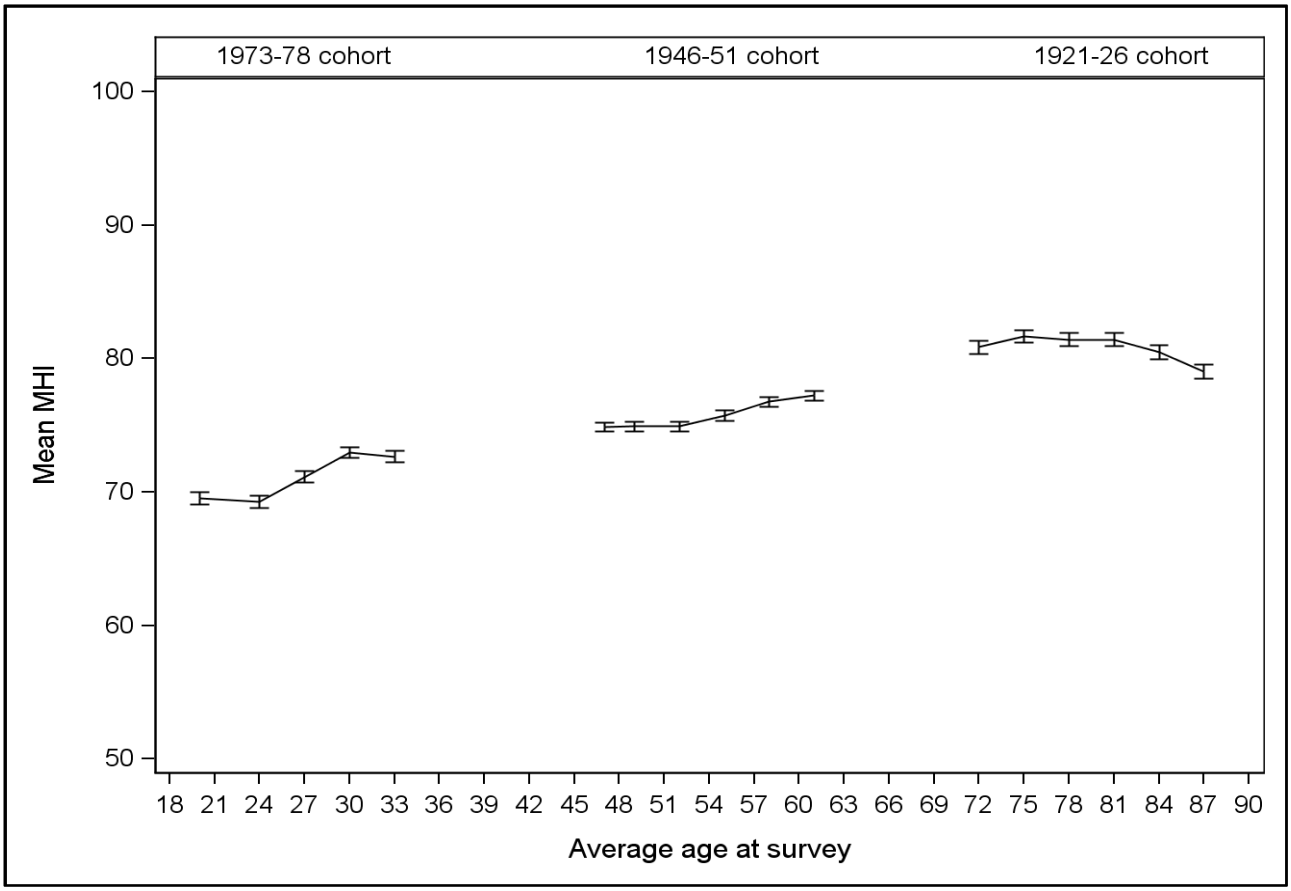

Figure 3-2 Mean mental health score in past four weeks (using SF-36 MHI); plotted against the average age of the women for that survey.

3.2.3 Psychological distress

The SF-36 MHI can also be used to estimate the prevalence of psychological distress using a cut point of ≤52. Figure 3-3 shows the prevalence of psychological distress by age. The circles indicate the prevalence estimate, for example at Survey 1 in the younger cohort, the estimated prevalence is 19% for young women with an age ranging from 18-23 years, plotted at approximately 20 years. The vertical lines indicate the reliability of the estimate with 95% confidence intervals. Wide confidence intervals indicate less reliable estimates. At Survey 2 (2000), when the young women had an average age of approximately 24 years, the prevalence of psychological distress in the cohort was approximately 19%. For mid-aged women the prevalence of psychological distress at Survey 1 [1996] (approximate age 48 years) was 12%. Figure 3-3 shows that the prevalence of psychological distress was highest amongst young women at Survey 1 (average age of approximately 20 years), and generally decreased with time in each cohort, except at later surveys amongst older women.

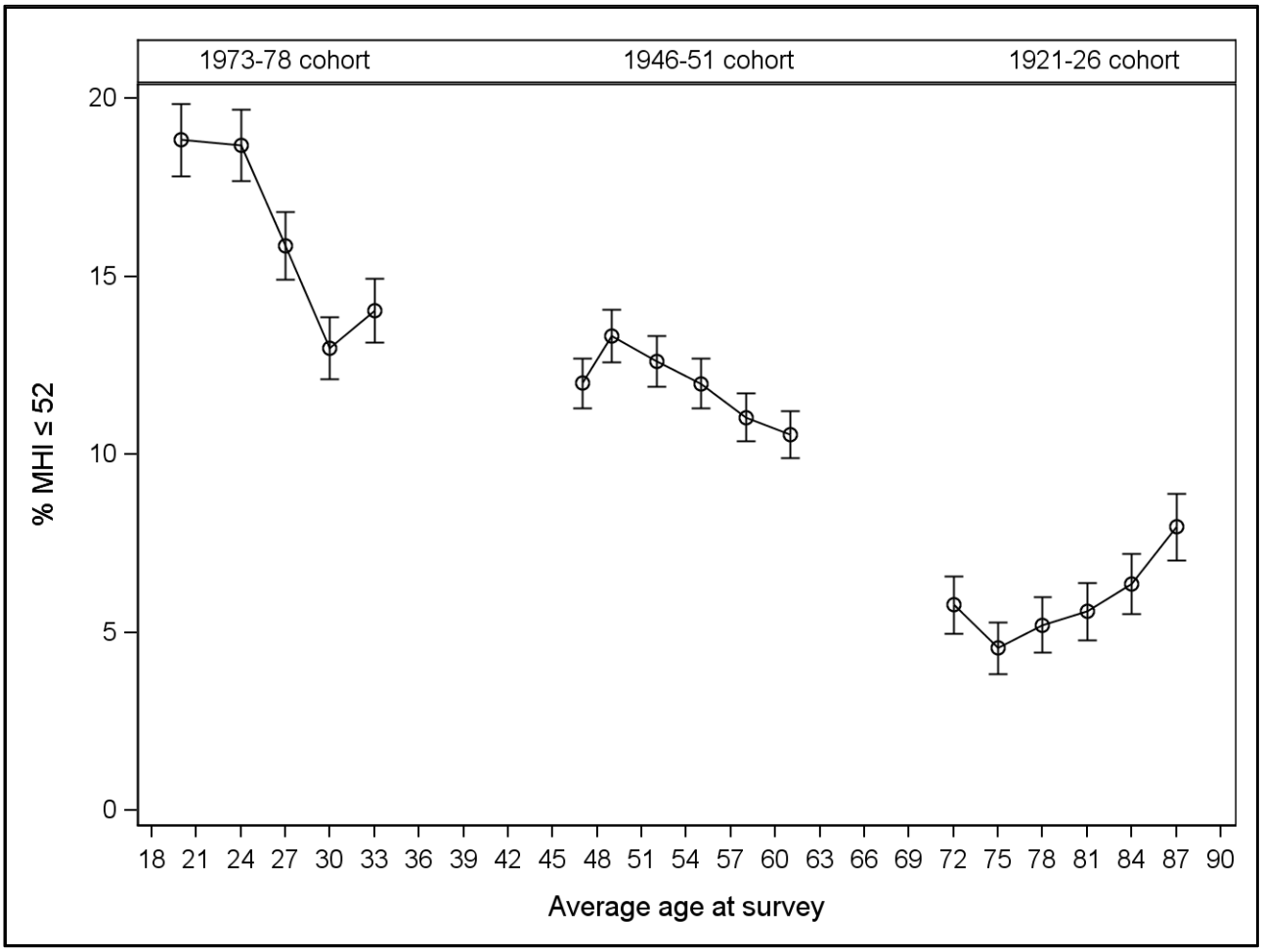

Figure 3-3 Percentage with psychological distress (SF-36 MHI ≤52) in past four weeks; plotted against the average age of the women for that survey, vertical lines indicate 95% confidence intervals.

3.2.4 Diagnosed or treated depression

The percentage of women from each cohort who reported being diagnosed or treated for depression in the three years prior to each survey is plotted against the average age of the women at the time of the survey (Figure 3-4). Data on self-reported diagnosis or treatment of depression or anxiety were not collected at Survey 1. The first point on the left shows the prevalence of diagnosed or treated depression in the young cohort at Survey 2 (conducted in 2000 when the women had an average age of approximately 24 years). The second point from the left is the prevalence of diagnosed or treated depression for the young cohort at Survey 3 (conducted in 2003, average age of approximately 27 years). The next two points show the prevalence of diagnosed or treated depression at subsequent surveys for the young cohort. The next group of points show the prevalence of diagnosed or treated depression at each survey among the mid-aged cohort; for example at Survey 2 (conducted in 1998 when the women had an average age of approximately 50 years) the prevalence of diagnosed or treated depression was approximately 9%. The final set of points shows prevalence estimates of diagnosed or treated depression from Survey 2 for the older aged cohort, starting at 4% (conducted in 1999 when the women had an average age of approximately 75 years).

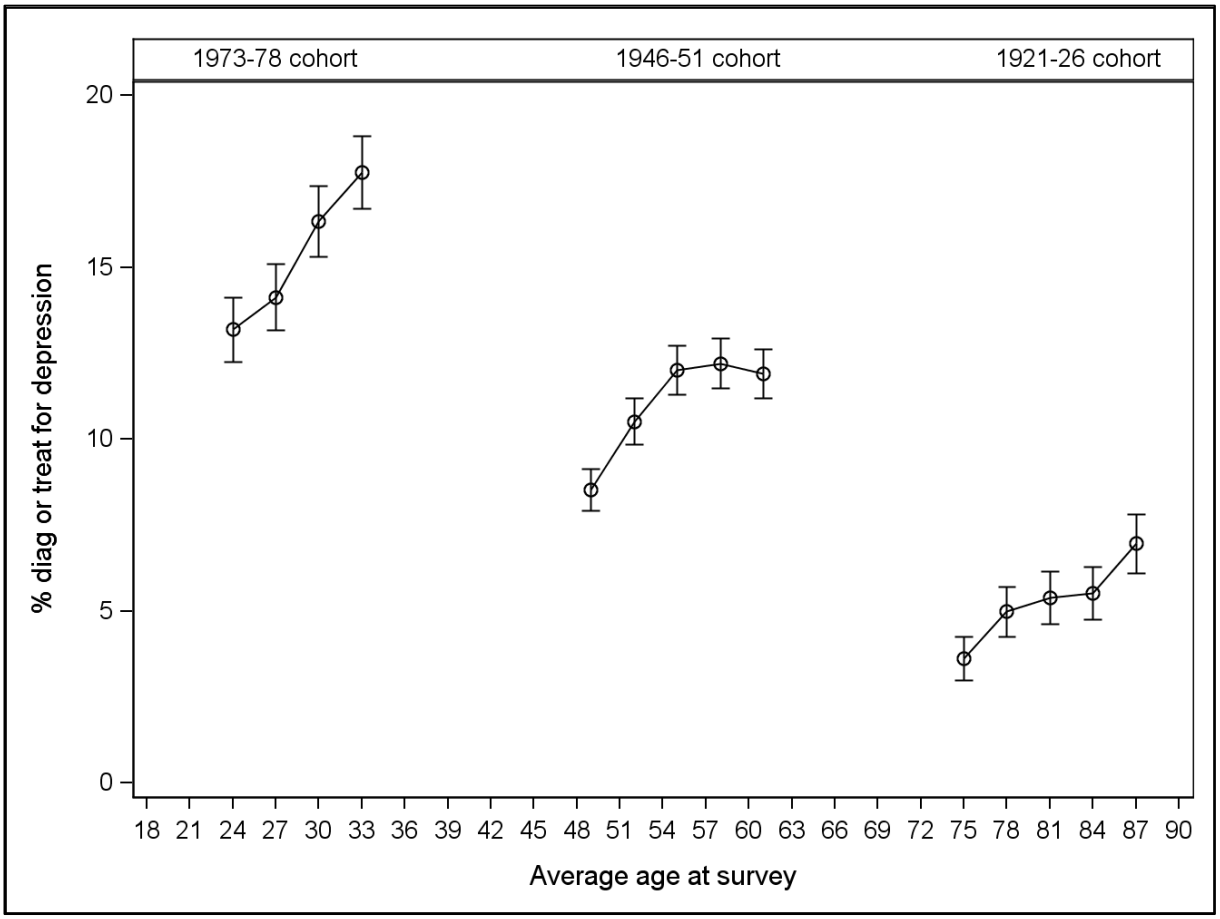

Figure 3-4 Percentage of women who reported diagnosis or treatment for depression in the previous three years, plotted against the average age of the women for that survey, vertical lines indicate 95% confidence intervals.

Across all cohorts, younger women (born 1973-78) had the highest prevalence of diagnosed or treated depression at any survey (13-18%). Mid-aged women (born 1946-51) had the second highest prevalence (9-12%) and older women (born 1921-26) had the lowest prevalence (4-6%). The prevalence increased at each survey for the young cohort. Among mid-aged women the prevalence increased and subsequently levelled out.

These data show the opposite pattern to Figure 3-3 which shows the proportion of women who meet the criterion for psychological distress at each survey. Figure 3-4 shows the percentage of women who report being diagnosed or treated for depression at each survey; an increasing pattern of detection and treatment of depression is reflected here. In other words, over time, the number of women showing psychological distress is declining (possibly as an effect of increasing age, a well-established phenomenon), while at the same time, the number of women *treated* for poor mental health is rising. These results may well be indicative of greater recognition and intervention of mental health problems in the community, especially among younger women.

3.2.5 Diagnosed or treated anxiety

The percentage of women who reported being diagnosed or treated for anxiety in the previous three years was similar for the 1973-78 cohort (5%-10%) and 1946-51 cohort (6%-10%), and increased over time (Figure 3-5). For older women (born 1921-26) the prevalence was lower than for younger and mid-aged women. A pattern of increased prevalence over time was also seen for the 1921-26 cohort, but this increase was not as great as in the other cohorts (3%-5%).

This pattern of increasing prevalence of self-reported diagnosis or treatment for anxiety is similar to the pattern of increased diagnosis and treatment for depression.

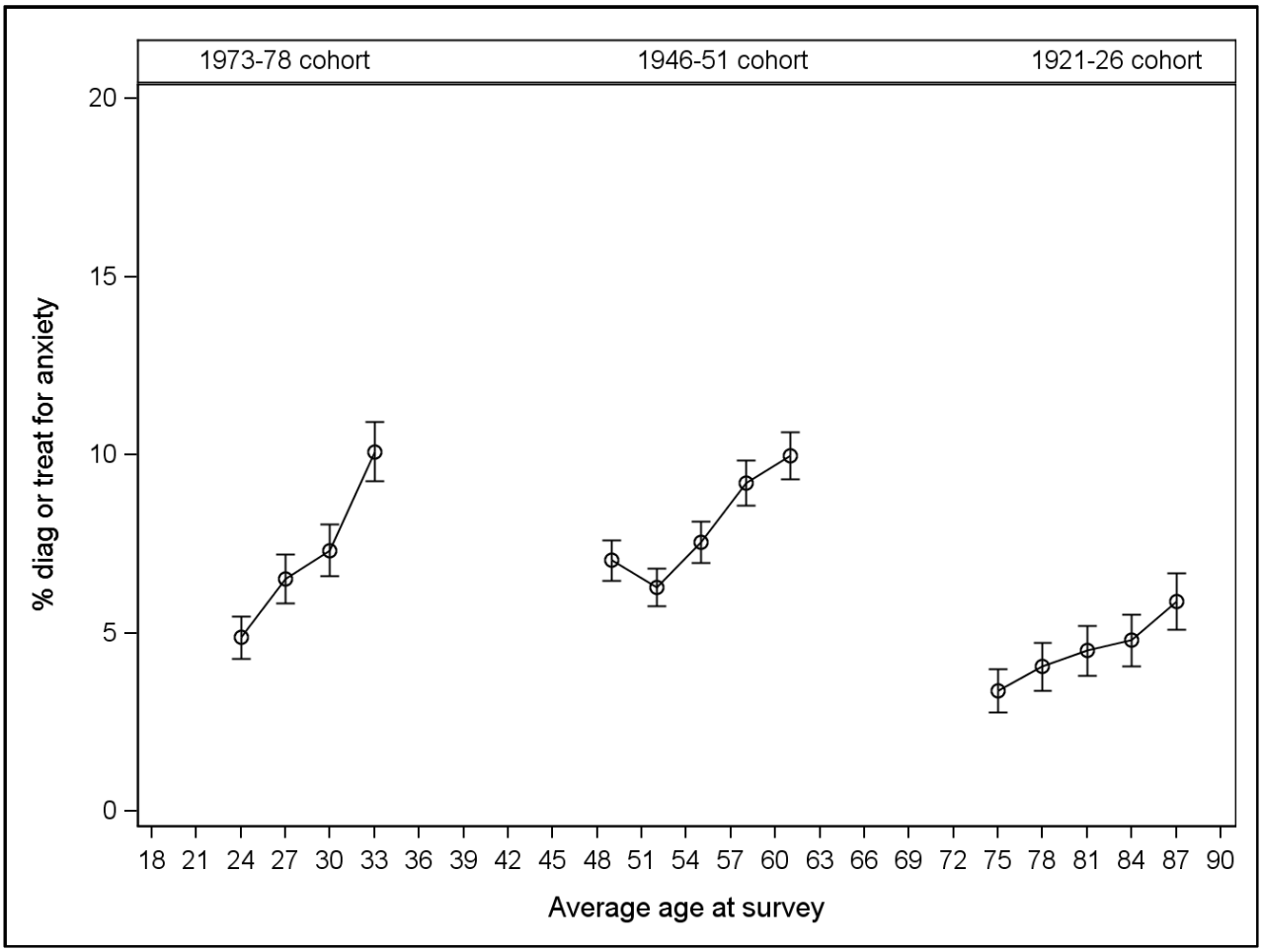

Figure 3-5 Percentage of women who reported being diagnosed or treated for anxiety in the previous three years, plotted against the average age of the women for that survey, vertical lines indicate 95% confidence intervals.

3.2.6 Prevalence of psychological distress for those with and without diagnosed depression

To understand these findings of increasing levels of diagnosis and treatment in the context of improving mental health, Figure 3-6 shows the prevalence of psychological distress for women who reported being diagnosed or treated for depression in the previous three years (signified in the figure by '+') compared with women who did not (signified in the figure by 'o'). Women reporting diagnosis or treatment for depression also reported considerably higher prevalence of psychological distress (36-48%) than those who did not (5-16%). This suggests that, even with medical help, women with poor mental health continue to have more psychological distress.

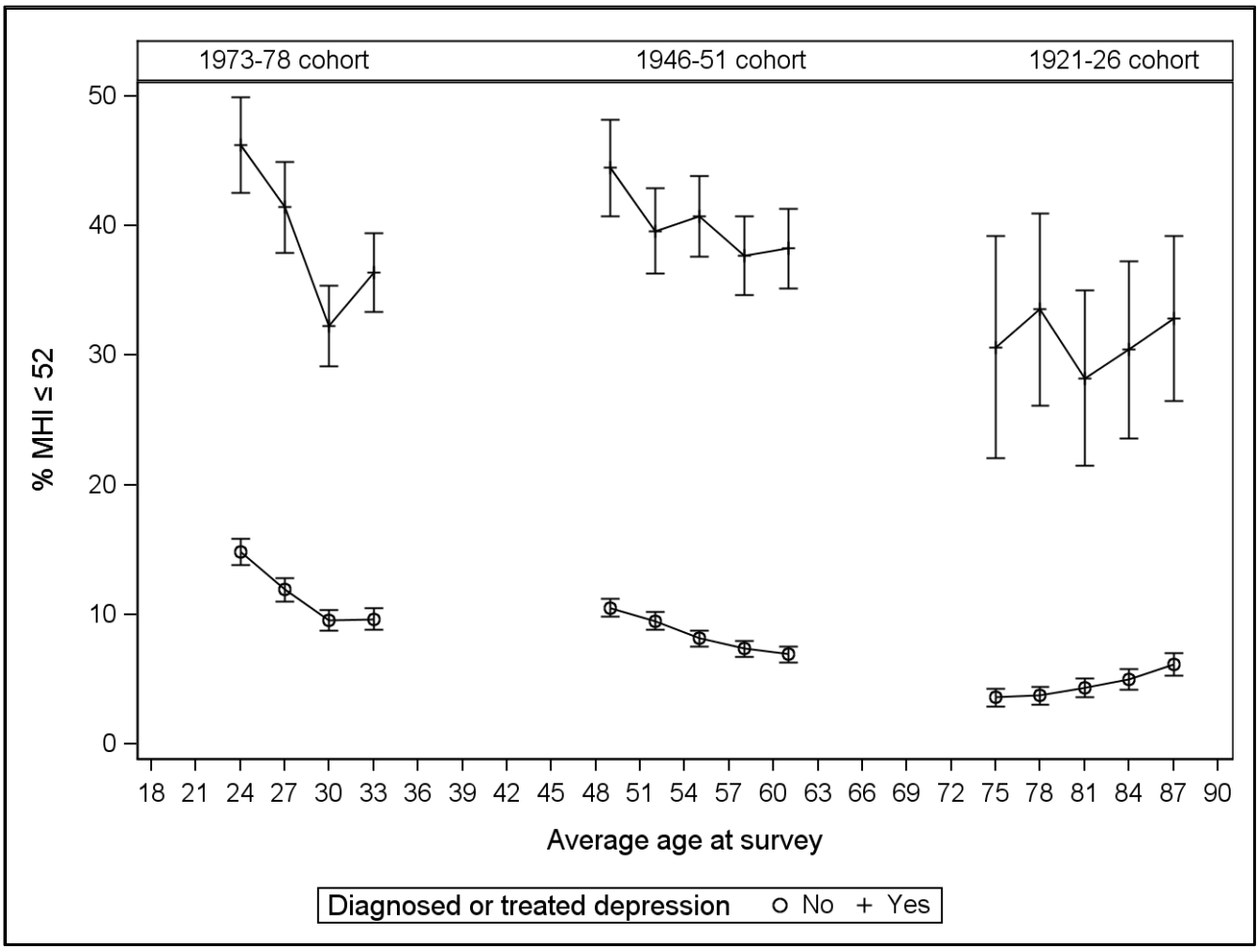

Figure 3-6 Percentage with psychological distress, (SF-36 MHI ≤52) indicating psychological distress in past four weeks; for those who did (+) and did not report (o) diagnosis or treatment for depression in the previous three years; plotted against average age of cohort at that survey; vertical lines indicate 95% confidence intervals.

3.2.7 Women with potentially undetected or unresolved psychological distress

The percentages of women who continue to meet the criterion for psychological distress at each survey are shown in Figure 3-7 as a proportion of women who either had current psychological distress (SF-36 MHI≤52) or reported being diagnosed or treated for either depression or anxiety in the previous three years. This figure shows the proportion of women who, based on their current symptoms of psychological distress, may need treatment. It shows that the percentage of women with ongoing poor mental health (that is potentially undetected or unresolved psychological distress) diminished over time. For the younger women this percentage changed from 48% to 24% and for the mid-aged women from 44% to 23%. However, the percentage for older women increased as psychological distress became more common.

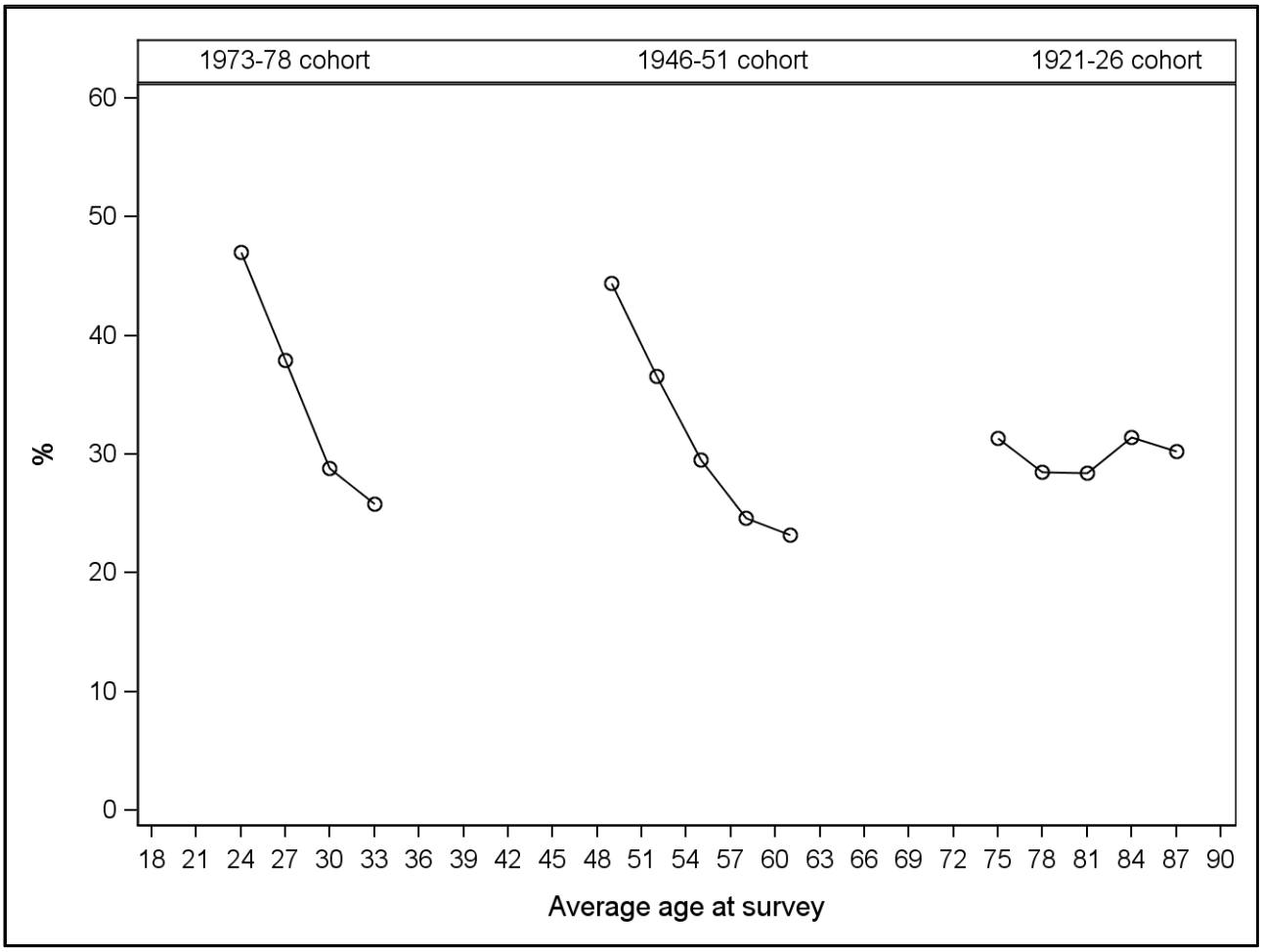

Figure 3-7 Percentage of women with ongoing psychological distress; therefore potentially undetected or unresolved psychological distress (calculated by identifying the number with MHI≤52 and dividing this by the number who had poor mental health or reported being diagnosed or treated in the previous 3 years.)

Note: By including those who have been diagnosed or treated the denominator includes all those who could have or did benefit from mental health screening or services.

3.3 Changes in mental health over time

3.3.1 Background

In Section 3.2 we provided a series of cross-sectional snapshots of the percentage of women with poor mental health at each survey. Section 3.3 follows the changing patterns of mental health over time for each cohort separately, to see the proportions of women with good or poor mental health at every survey, and the proportion of women who change from good to poor mental health, or the reverse. This type of analysis is only possible with longitudinal studies such as ALSWH. Patterns of changing mental health status over time are shown in Figure 3-8, Figure 3-9 and Figure 3-10. Only women with data available at all surveys are included in these figures.

3.3.2 The 1973-78 cohort

Figure 3-8 describes the changes in mental health status over time among women born 1973-78. Of women in the cohort born 1973-78, the proportion with psychological distress at Survey 1 was 18.8% (purple bar), this reduced to 14% by Survey 5 (see table at the top of Figure 3-8). More than half the women with psychological distress at Survey 1 did not continue to have it at Survey 2 (top green bar). The thin purple bars indicate women's mental health status has changed over time, from meeting to not meeting the criterion for psychological distress. Few women continue to meet the criterion across all surveys (top purple bar in Survey 5) while well over half never met the criterion (bottom green areas for all surveys). (Appendix C provides more detailed instructions on how to interpret this style of graph)

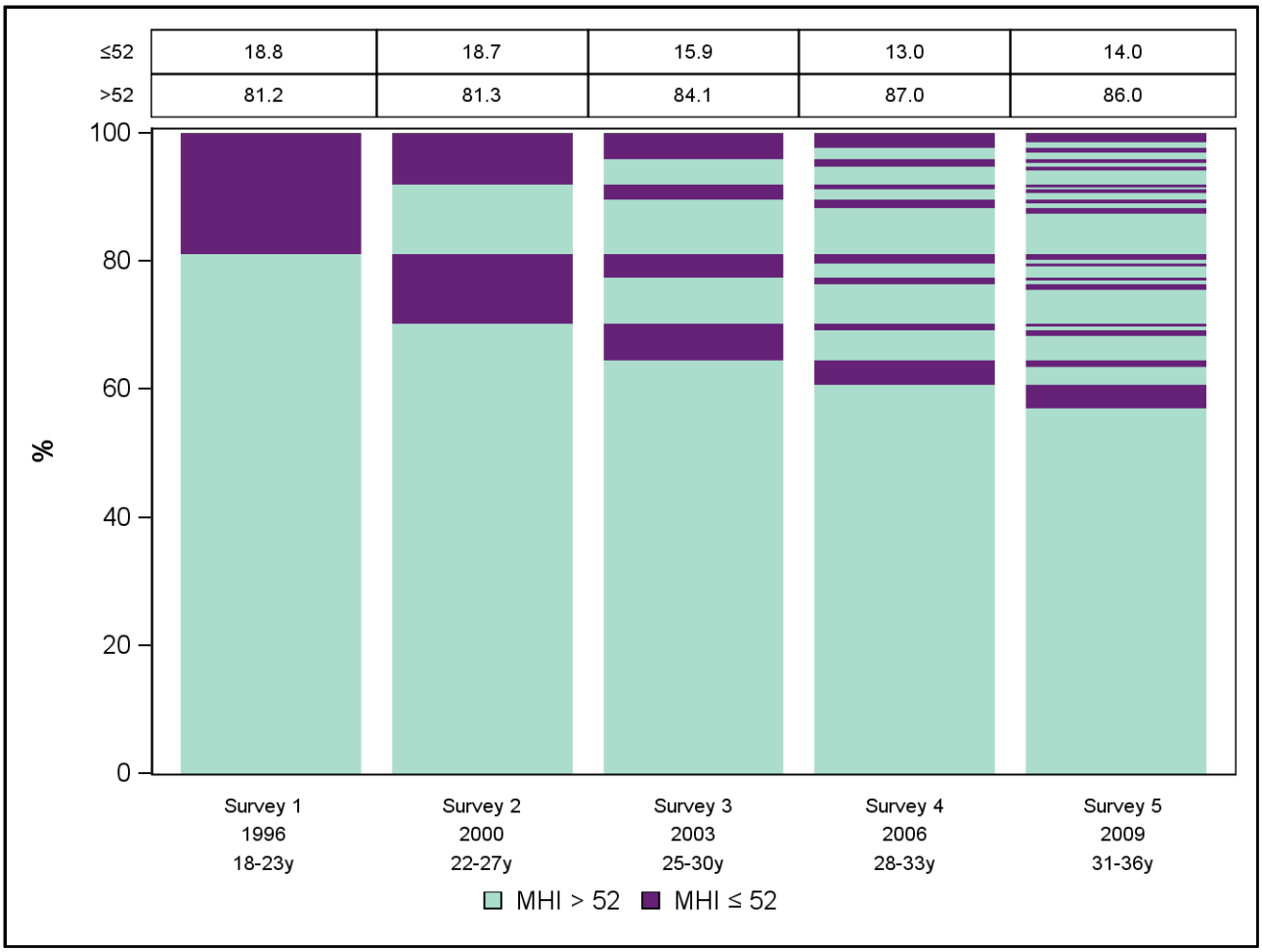

Figure 3-8 Percentage of younger women (born 1973-78) with psychological distress (purple areas) in past four weeks using the SF-36 MHI ≤52.

The data in Figure 3-8 show that young women had more than four times greater odds (probability or chance) of meeting the criterion for psychological distress if they met the criterion at the previous survey and more than twice the odds if they met the criterion at the survey before that (see Table 3-1). That is, young women had four times greater probability of having psychological distress than not having psychological distress if they also reported psychological distress in the previous survey.

3.3.3 The 1946-51 cohort

For mid-aged women, 12% (purple bar) had psychological distress at Survey 1 (Figure 3-9). (Appendix C provides instructions on how to interpret this style of graph using Figure 3-8 as an example). Approximately half of these women did not have psychological distress at Survey 2 (top green bar). The thin purple bars indicate women moving in and out of psychological distress over time however, few women continued to have psychological distress at all surveys (top purple bar at Survey 6) and more than 60% never met the criterion.

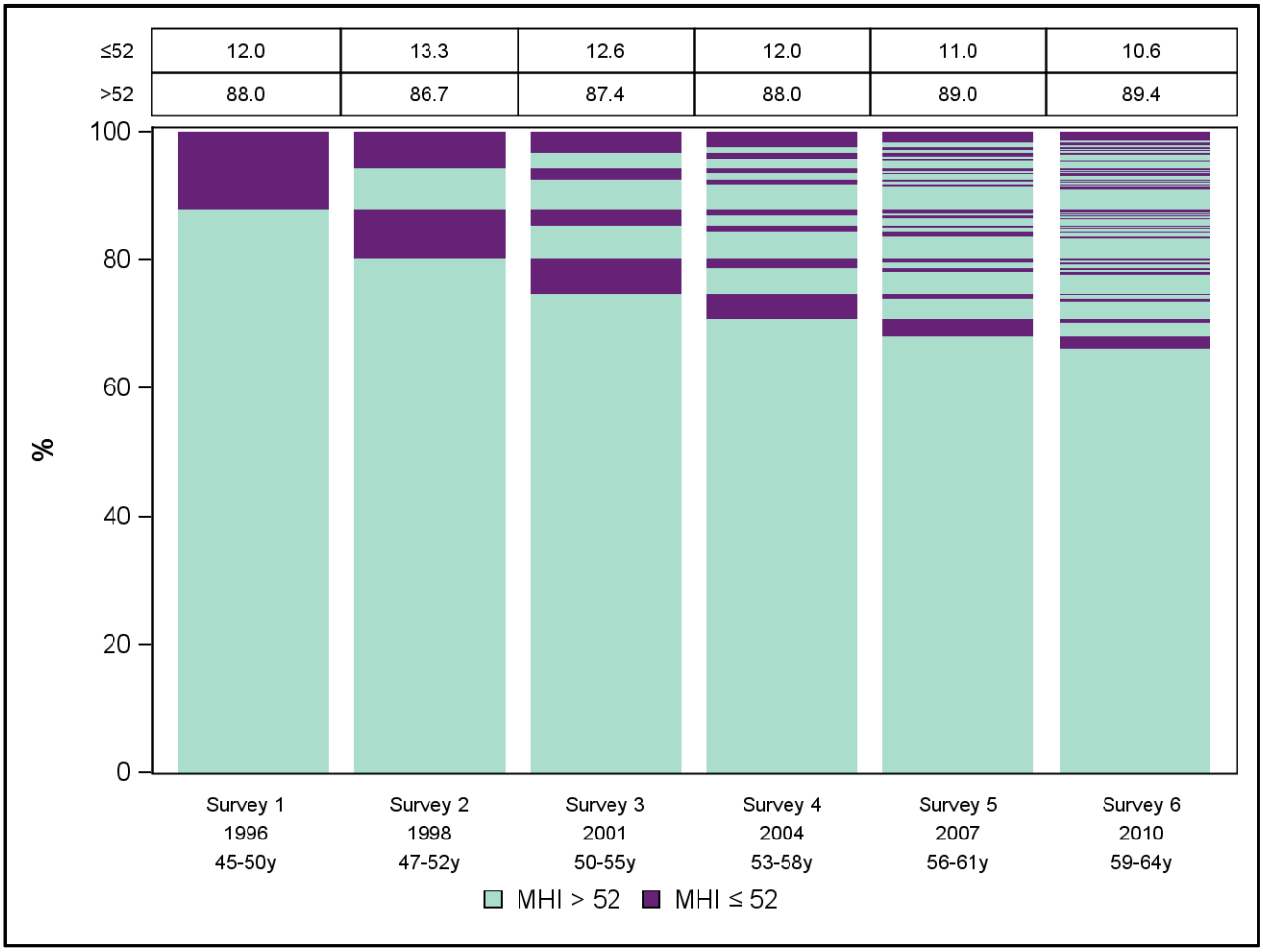

Figure 3-9 Percentage of mid-aged women (born 1946-51) who met the criterion for psychological distress (purple areas) in past four weeks using the SF-36 MHI ≤52.

The data in Figure 3-9 show that mid-aged women had more than four-fold greater chance of meeting the criterion for psychological distress if they met the criterion at the previous survey and a three-fold greater chance if they met the criterion two surveys prior (see Table 3-1).

3.3.4 The 1921-26 Cohort

The percentage of older women (born 1921-26) with psychological distress at Survey 1 was 6% (purple bar;Figure 3-10). (Appendix C provides instructions on how to interpret this style of graph using Figure 3-8as an example). This increased to 8% by Survey 6. Approximately half those with psychological distress at Survey 1 did not have symptoms at Survey 2 (top green bar). However another group had psychological distress at Survey 2 but not at Survey 1 (lower purple bar in Survey 2). From Survey 2 onwards more women met the criterion for psychological distress, with the greatest contribution from the group who had not met the criterion before.

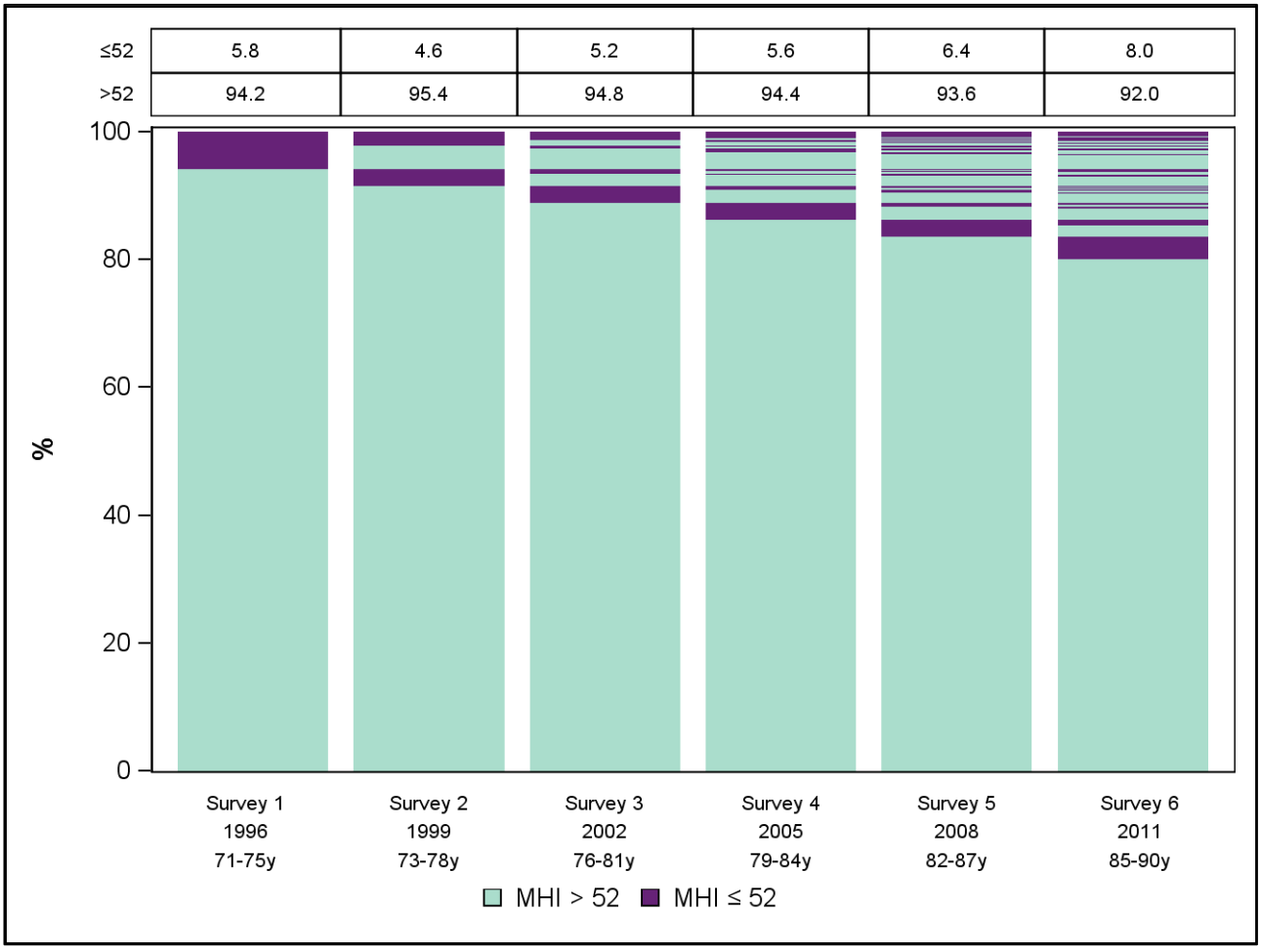

Figure 3-10 Percentage of older women (born 1921-26) with psychological distress (purple areas) in past four weeks using the SF-36 MHI ≤52.

The data presented in Figure 3-10 show that older women had more than a nine-fold greater chance of meeting the criterion of psychological distress if they had met the criterion at the previous survey and more than four-fold greater chance if they met the criterion at the survey before that (see Table 3-1).

Table 3-1 Probability of meeting the criterion for psychological distress if experiencing psychological distress 3 and 6 years prior

	1973-78 Cohort	1946-51 Cohort	1921-26 Cohort
Psychological distress 3 years prior	↑↑↑↑↑	↑↑↑↑↑	↑↑↑↑↑↑↑
Psychological distress 6 years prior	↑↑↑	↑↑↑↑	↑↑↑↑↑

Arrows indicate strength of association (probability ratio) significant at p<0.05. No arrow indicates there is no evidence of a relationship.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5<6.5) ↑↑↑↑↑↑ (6.5<9.5) ↑↑↑↑↑↑↑ (9.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

3.4 Summary

3.4.1 Prevalence of poor mental health

- Psychological distress was most common among young women at Survey 1 when women were aged 18-23 years, and decreased with age. For younger and mid-aged women the prevalence of symptoms of psychological distress decreased over time, but in older women prevalence increased as women reached very old age.
- In contrast, increases were seen in prevalence of diagnosed or treated depression and diagnosed or treated anxiety during the three year period prior to the survey. These trends suggest an increase in detection and management of mental health disorders has occurred over time.
- The decreasing prevalence of psychological distress over time for younger and mid-aged women was seen for those who reported being diagnosed or treated for depression as well as those who did not. However, women with diagnosed or treated depression had poorer mental health compared with those without a diagnosis.
- Among women who reported mental health problems (i.e., those meeting the criterion for psychological distress or who reported having been diagnosed or treated for depression or anxiety) the proportion who continued to meet the criterion decreased from more than 40% to approximately 20% over time for younger and mid-aged women. This is a substantial decrease over time in the proportion of women with unresolved poor mental health. This decrease reflects a combination of decreasing prevalence of psychological distress with increasing age and an increase in diagnosis and treatment of poor mental health in the community, likely due to such programs as the Better Access Scheme (BAS).
- There was a higher prevalence of anxiety alone than depression alone and women who had depression were likely also to have anxiety. This finding was consistent in both mid aged and younger women but does depend on the self-reported measures used for these disorders.
- Anxiety symptoms are more prevalent than depressive symptoms across age cohorts; co-morbid anxiety and depression are also evident in our sample, again for all ages. However, ALSWH data suggest that diagnosis and treatment is less common for those reporting anxiety than for those experiencing depression.

3.4.2 Changing patterns of poor mental health over time

- Women from all cohorts show patterns of change between good and poor mental health over time, although more than half never reported psychological disorders (approximately 50%, 65% and 80% in the young, mid-aged and older cohorts respectively).
- Few women remained in a state of poor mental health at every survey. However, some women had more than one episode of psychological distress during the study period.
- Poor mental health at previous surveys was a very strong predictor of subsequent poor mental health.

3.5 Discussion

Analyses of the ALSWH data found that anxiety was more prevalent than depression, which is consistent with other Australian (Slade et al., 2009) and international studies (Kessler, 2005; Rhebergen et al., 2011). The ALSWH study found that co-morbid anxiety is common in women with depression, which is also supported by other studies (Rhebergen et al., 2011; Tiller, 2012). Some studies report that anxiety often occurs before depression (Fichter et al., 2010; Tiller, 2012). The literature also suggests that an episode of comorbid anxiety and depression lasts longer than having either condition alone (Rhebergen et al., 2011; Kemp et al., 2012) and that such co-morbidity is more likely to be associated with a later episode of either condition alone or together (Fichter et al., 2010). A recent analysis of Australian National Mental Health and Well-being Surveys from 1997-2007 identified an overall increase in risk of anxiety disorders but not depression, particularly in mid-aged women, and called for public education to focus on anxiety disorders (Reavely et al., 2011). The findings of the current report support the need for greater attention to the mental health condition of anxiety.

Overall, the highest prevalence for mental health conditions was seen amongst young women. The ALSWH data on current symptoms of psychological distress (SF-36 MHI), depression (CESD-10) and anxiety (GADanx) show that the prevalence for the younger and mid-aged cohorts decreased over time and the prevalence at the last survey for the younger cohort was similar to the prevalence at Survey 1 for the mid-aged cohort, indicating a possible age effect. The pattern for the older women was different with an increase in psychological distress in older age. This pattern has also been found in studies that consider mental health in later life, as shown in a recent systematic review (Luppa et al., 2012), which reported increasing rates of depressive disorders in the oldest age groups (85-89 years and 90+ years).

The overall pattern of decreased prevalence with age found in this study is consistent with other Australian (Slade et al., 2009) and overseas studies (Martin-Merino et al., 2010, Grant et al., 2009). For example, the Australian 2007 National Survey of Mental Health and Well-being reported the prevalence of mental health disorders decreased with age, from nearly 30% amongst young women aged 16-24 years to approximately 7% amongst older women aged 75+ (Slade et

al., 2009). However, these studies use data on different individuals at each survey. The benefit of the ALSWH data is that it is from the same women followed over time and can therefore demonstrate with confidence that age is influencing changes in prevalence rather than solely societal or other external factors.

The ALSWH surveys also asked women to report if they had been diagnosed or treated for depression in the three years prior to each survey. For these data a pattern of increased prevalence over time was found. The same pattern was seen for a reported diagnosis or treatment for anxiety. An increase in people accessing mental health services has been reported in other Australian studies (Parslow et al., 2011), particularly primary care management of depression (Harrison, 2012). Increased access to mental health care through general practice can be linked to the Australian Government Medicare Better Access Scheme for mental health, suggesting good uptake of this initiative. The 2010 National Mental Health Report showed a 137% increase in total government spending on mental health between 1993 and 2008 (Department of Health and Ageing, 2010). It may also be attributed to a public awareness campaign by *beyondblue* and other agencies (Highet et al., 2006).

The ALSWH data also show a higher prevalence of current symptoms than prevalence of being diagnosed or treated for psychological disorders. This suggests that a proportion of women with mental health problems are not diagnosed or adequately treated. This finding is consistent with Australian (Parslow et al., 2011; Wilhelm et al., 2008) and overseas studies (Marcus et al., 2012). One Australian study reported that 60% of individuals with self-assessed mental health needs did not seek professional help, although 80% of these had seen a GP for other matters. Among older people, 90% of persons aged 60+ years with self-assessed mental health needs did not obtain help despite seeing the GP for other reasons (Parslow et al., 2011).

The proportion of young ALSWH women with potentially undetected or unresolved psychological distress decreased over the study period (1996-2009) from 48% to 22%. This appears to be a combination of declining prevalence of psychological distress with increasing age coupled with an increase in detection of poor mental health. The overall improvement in the mental health of these women provides evidence that uptake of the Australian Government Medicare Better Access Scheme for mental health is effective. This is consistent with findings from the Bettering the Evaluation and Care of Health (BEACH) study using a nationally representative sample from Australian general practice (Harrison et. al., 2012). The BEACH study found an increase in the management of depression during the same time period, with evidence of increases in mental health care plans and referrals to psychologists. Another paper from the BEACH study found an increase in antidepressant use for the same period (Harrison et. al., 2011). Chapter 4 explores mental health service use in more detail.

The figures in section 3.2 show that many women who met the criterion for psychological distress at one survey did not do so at the next survey (3 years later); however, some did have another episode at a later survey. This pattern of transition in and out of poor mental health is consistent

with international longitudinal studies of mental health over time (Rhebergen, 2011; Interian, 2011; Tyrer et al., 2004). For example, one study reported depression is likely to remit after two and a half years but that 37% of those whose symptoms improved or who recovered, experienced a relapse or recurrence of symptoms (Interian et al., 2011). Another study followed a group with diagnosed depression and reported that only 11% experienced ongoing symptoms over the seven years of the study, 37% were symptom free for the seven years after the initial episode and 60% were symptom free in the 12 months prior to the 7 year follow-up (Rhebergen et al., 2011). In addition to people having ongoing problems or experiencing reoccurrence, these ALSWH graphs show a number of new cases with mental health problems; however, it is likely that some of these women had mental health problems before the ALSWH study period.

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4 Health service use over time

4.1 Introduction

To improve access to mental health services, items for mental health services were introduced to the Medicare Benefits Schedule (MBS) under the Better Access Scheme (BAS) in November 2006. The initiative provides for patients with a mental health disorder to receive up to ten individual mental health services per year, including consultations with psychiatrists, eligible psychologists, social workers, occupational therapists and general practitioners who have undertaken mental health skills training. Rebates for these services are available to patients who have been referred by a paediatrician or via a General Practitioner (GP) Mental Health Care Plan or a Psychiatrist Assessment and Management Plan.

Evaluation of the BAS showed that use of these items has been high and has increased over time (Pirkis et al., 2011). It has been estimated that one in 19 Australians received at least one BAS service in 2009. While this rate of use indicates a demand for these services, it has been difficult to estimate the degree that uptake of the BAS has increased treatment rates for people with mental health problems, and whether the scheme has improved access for groups that previously had the greatest difficulties accessing mental health care, relative to their mental health needs.

In this chapter we assess the rate of uptake of different service types under the BAS by women who participate in ALSWH. ALSWH has the advantage of being able to compare women who use the BAS with those who report a diagnosis of a mental health problem (depression or anxiety) and have not used BAS items. We can compare these women according to their sociodemographic characteristics as well as trends in their mental health related quality of life as measured by the SF-36 Mental Health sub-scale (MHI).

Data in this section are for women who consented to allow linkage to Medicare data. Around two-thirds of the women in ALSWH have provided consent for ALSWH to access these data, with small differences between those who do and do not provide this consent (Byles et al., 2007). Women did not need to complete all surveys to be included in these analyses.

4.2 Better Access Service (BAS) use over time, by service type

The cumulative uptake of different service types under the BAS is shown in Figure 4-1, Figure 4-2and Figure 4-3 for the younger (born 1973-78), mid-aged (born 1946-51) and older (born 1921-26) cohorts respectively. Since their introduction in 2006, there has been a steady increase in use of these items by all three cohorts. However the overall use of BAS services is greatest among women born 1973-78, and lowest among women in the 1921-26 cohort.

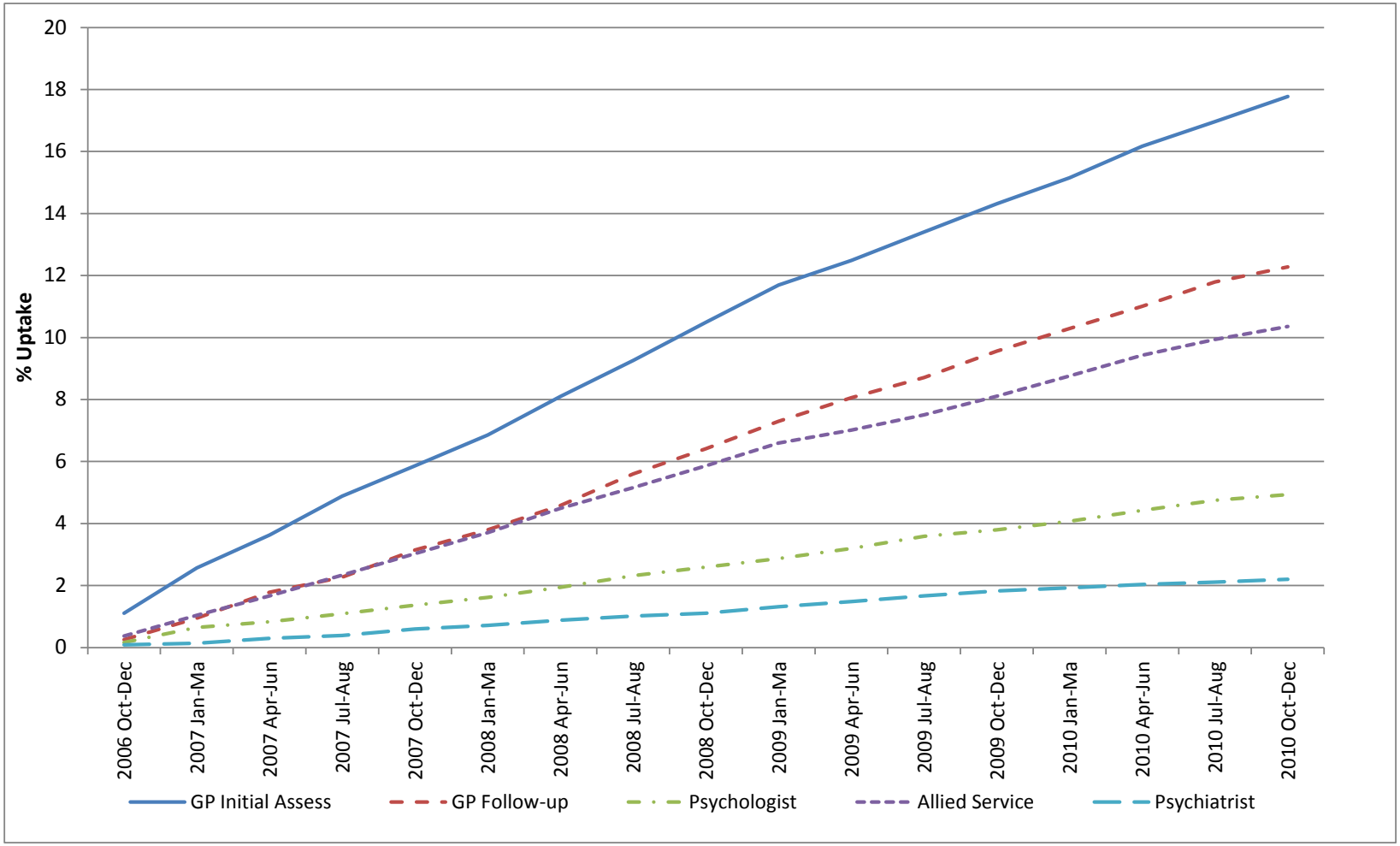

Figure 4-1 Cumulative uptake of BAS services for the cohort born 1973-78.

Figure 4-1 shows the rapid uptake of these services by women in the 1973-78 cohort with almost 6% of the women having had an assessment for a mental health care plan[1] within one year of the introduction of these items and almost 18% having had at least one assessment by December 2010. Under the BAS, it is recommended that a GP mental health treatment plan should be reviewed at least once. The rate of follow-up services provided by GPs[2] was lower than for initial assessments, with around 12% of women having returned by the end of 2010 for either a review of the initial GP mental health care plan or for further GP consultations under the BAS. This difference is to be expected because there will be a time lag between initial and follow-up visits.

The highest use of focussed psychological services[3] was for allied health providers, which includes services by counsellors, social workers and occupational therapists, with lower rates of use of BAS services provided by clinical psychologists[4] and psychiatrists.[5] Specific mental health care management strategies provided by general practitioners were rarely used and are not included in the figure.[6]

[1] Medicare item numbers 2700, 2701, 2715 or 2717
[2] Medicare item numbers 2712,2713
[3] Medicare item numbers 80100, 80105, 80110, 80115 and 80120 for provision of FPS services by a psychologist; 80125, 80130, 80135, 80140 and 80145 for provision of FPS services by an occupational therapist; and 80150, 80155, 80160, 80165 and 80170 for provision of FPS services by a social worker.
[4] Medicare item numbers 80000 TO 80020
[5] Medicare Item numbers 291, 293, 296, 297, 299.
[6] Medicare item numbers 2721 to 2727

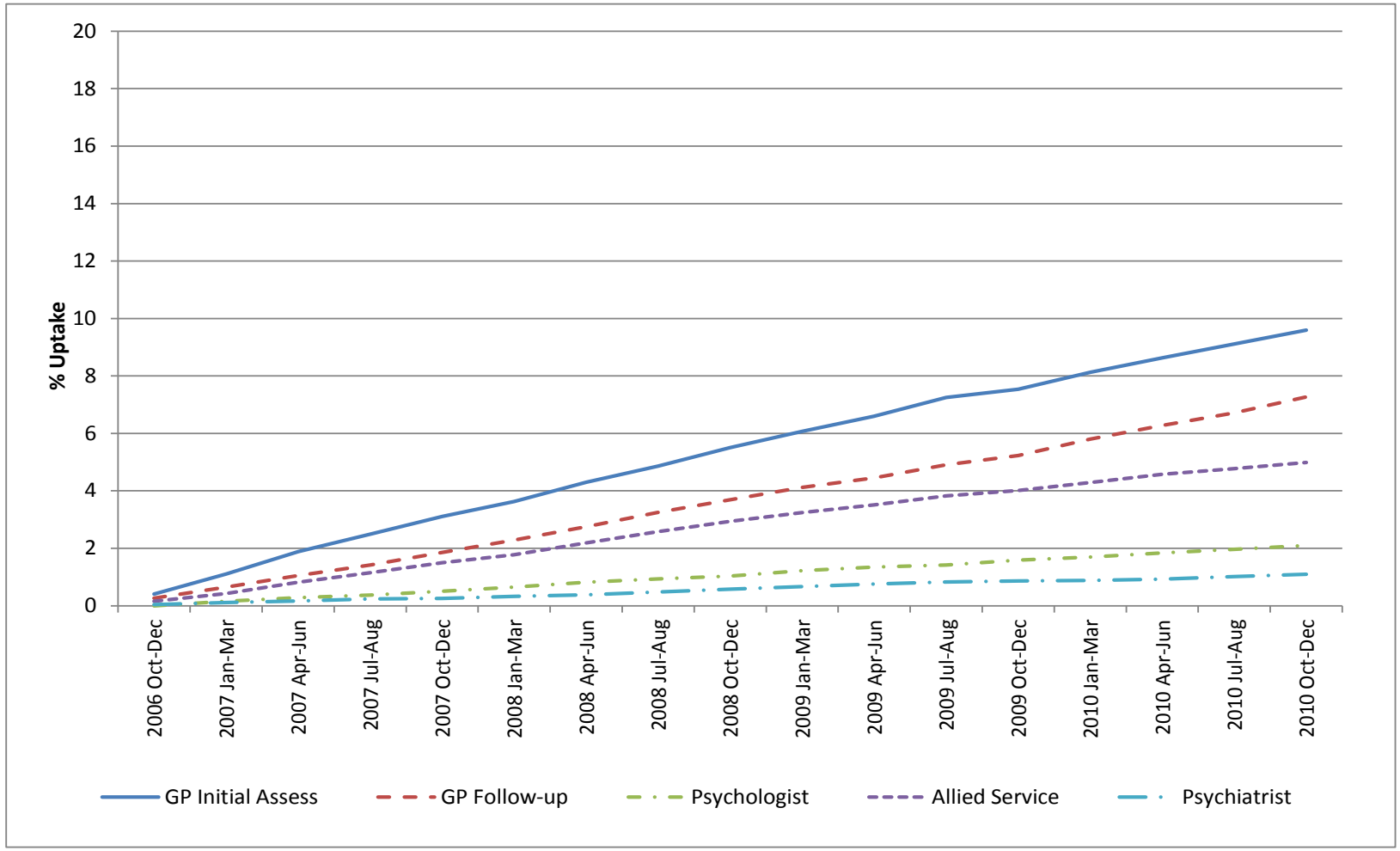

Figure 4-2 Cumulative uptake of BAS services for the cohort born 1946-51.

Women born 1946-51 (Figure 4-2) had similar patterns of use of BAS items with regard to service type, but at a lower rate. By December 2007, less than 4% of women in this cohort had had at least one assessment for a mental health care plan and by December 2010 almost 10% had used at least one of these BAS items. Overall, around 7% of women in this cohort had returned for either a review of the initial GP mental health care plan or for further GP consultations under the BAS. As for the younger cohort, focussed psychological strategies provided by allied health care workers were the most commonly used psychological services item, with 5% of women in the 1946-51 cohort having claims for these items. Only 2% of women had any claims for focussed psychological therapy services provided by registered clinical psychologists and 1% had claimed for services provided by a psychiatrist under the BAS.

Older women (born 1921-26) had much lower rates of BAS service use (Figure 4-3), with very few women having used any of these services within the first year following their introduction and only 3% of women having submitted a claim for a GP mental health care plan by December 2010. However, the proportion of women who had a GP initial assessment and a GP follow-up service under the BAS is higher among women in this age group than the other two cohorts.

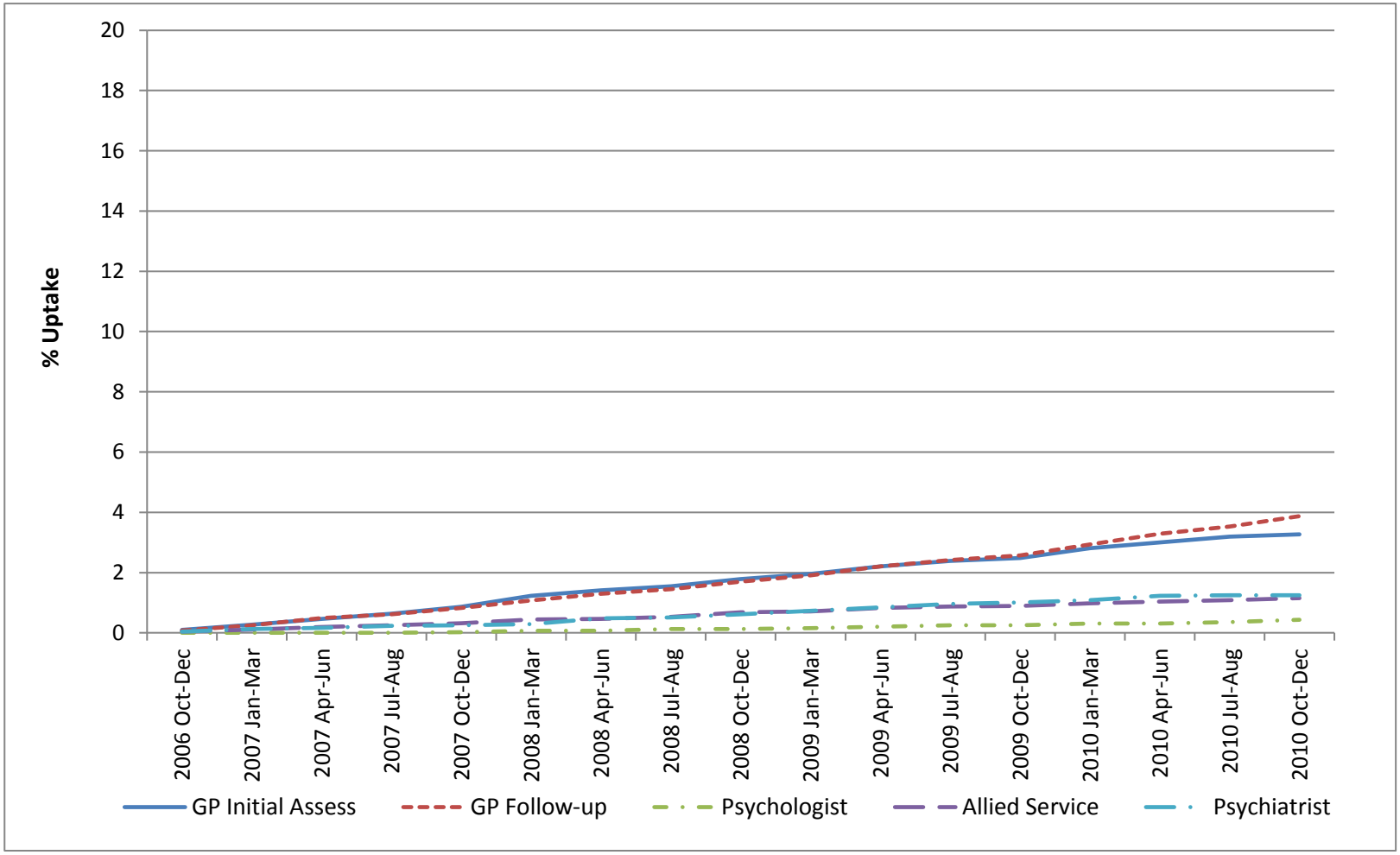

Figure 4-3 Cumulative uptake of BAS services for the cohort born 1921-26.

4.3 Factors associated with use of Better Access Scheme (BAS) items

This section compares characteristics of women who had used the BAS items at any time since their introduction in 2006, with women who reported a diagnosis of depression or anxiety on either of the last two surveys, and therefore might have been eligible to use a service under BAS. As reported in Chapter 3, not all women with poor mental health are detected or treated; therefore a detailed description of characteristics of those identified with psychological distress, using a validated measure, is provided in Chapter 5. Here the focus is on the characteristics of those who used the BAS and those who self-reported a diagnosis of depression/anxiety but did not use BAS. Table 4-1 shows characteristics identified at Survey 4 for these two groups of women in the 1973-78 cohort. Compared with non-users of the BAS, those who were BAS users were more likely to live an urban area, have higher (university) education and private health insurance.

Table 4-1 Characteristics of women in the 1973-78 cohort using BAS compared to women who reported having been diagnosed with depression or anxiety at Survey 4 (2006) or Survey 5 (2009) but did not use BAS (N=1278)

	BAS User (62%)	Self-reported Depression/Anxiety Non BAS User (38%)	P-Value
Characteristics at Survey 4 (2006)			
Urban Area of Residence	65	52	<.001
Marital Status			
Never Married	28	29	0.14
Married/De facto	66	63	
Separated/Divorced	6	8	
Qualifications			
Up to Year 12	16	25	<0.001
Trade/TAFE	25	27	
University degree	59	49	
Private Health Insurance			
2006	11	6	0.03
2009	12	10	
2006 and 2009	53	57	
No Contribution	24	27	
Health Care Card			
2006	7	9	0.50
2009	8	6	
2006 and 2009	7	8	
No card	78	76	
Consulted a GP			
No visits	3	3	0.88
At most 4	54	53	
Five or more	43	44	
Consulted a Specialist			
No visits	42	48	0.08
At most 4	40	34	
Five or more	18	19	

Table 4-2 shows characteristics for women born 1946-51 as measured at Survey 5, according to whether they have used items under the BAS and whether they reported a diagnosis of anxiety/depression on either of the last two surveys (Survey 5 or Survey 6) and did not use the BAS. BAS users were more likely to have private health insurance and have more than five GP consultations in the previous year, compared with non-BAS users.

Table 4-2 Characteristics of women in the 1946-51 cohort using BAS compared with women who reported having been diagnosed with depression or anxiety at Survey 5 (2007) or Survey 6 (2010) but did not use BAS (N=1753)

	Better Access Scheme User (39%)	Self-reported Depression/Anxiety (and Non BAS User) (61%)	P-Value
Characteristics at Survey 5 (2007)			
Urban Area of Residence	64	63	0.72
Marital Status			
Never Married/Widowed	11	10	0.78
Married/De facto	69	70	
Separated/Divorced	20	20	
Qualifications			
Up to Year 10	41	46	0.18
Year 12/Trade/TAFE	40	38	
University degree	18	16	
Private Health Insurance			
2007	7	5	
2010	7	5	
2007 and 2010	67	64	0.001
No Contribution	19	26	
Health Care Card			
2007	9	7	
2010	13	11	0.42
2007 and 2010	25	26	
No Card	53	56	
Consulted a GP			
No visits	1	2	0.02
At most 4	44	50	
Five or more	54	48	
Consulted a Specialist			0.19
No visits	38	40	
At most 4	50	51	
Five or more	12	9	

Among women born 1921-26, few were categorised as using BAS items (see Table 4-3). Those who used BAS items were less likely to have private health insurance or a pensioner concession card compared with non-BAS users.

Table 4-3 Characteristics of women in the 1921-26 cohort using BAS compared with women who reported having been diagnosed with depression or anxiety at Survey 4 (2005) or Survey 5 (2008) but did not use BAS (N=756)

	Better Access Scheme User (18%)	Self-reported Depression/Anxiety (and non-BAS user) (82%)	P-Value
Characteristic at Survey 4 (2005)			
Urban Area of Residence	48	45	0.56
Marital Status			
Never Married/Widowed	52	56	0.27
Married/De facto	44	37	
Separated/Divorced	4	7	
Qualifications			
Up to Year 10	66	72	0.20
Year 12/Trade/TAFE	30	23	
University degree	4	5	
Private Health insurance			
2005	13	13	0.04
2008	2	1	
2005 and 2008	33	46	
No Contribution	53	39	
Pension Concession Card			
2005	14	23	0.006
2008	4	11	
2005 and 2008	48	43	
No Card	34	23	
Health Care Card			
2005	42	25	0.17
2008	20	42	
2005 and 2008	38	34	
Veterans Affairs Gold Card Holder either S4, S5	27	21	0.11
Consulted a GP			
No visits	0.5	0.5	0.42
At most 4	28	23	
Five or more	71.5	76.5	
Consulted a Specialist	50	60	0.04

4.4 Trends in mental health-related Quality of Life for women using BAS services

This section compares changes in SF-36 mental health-related quality of life sub-scale scores (MHI) for three groups of women: a) those who have used the BAS, b) those who reported a diagnosis of anxiety/depression at either of the last two surveys but did not use BAS, and c) remaining women (see Figure 4-4). Across all cohorts and all time points, women who had not reported a diagnosis or treatment for depression or anxiety had the highest MHI scores, indicating good mental health. There were no significant differences in mean psychological distress scores between those women who did use the BAS and those with depression/anxiety who did not use the BAS, among both the 1973-78 and 1946-51 cohorts. In the older cohort, women using BAS items had better mental health (indicated by higher MHI mean scores) across all surveys compared with those who reported a diagnosis of depression/anxiety but did not use the BAS items.

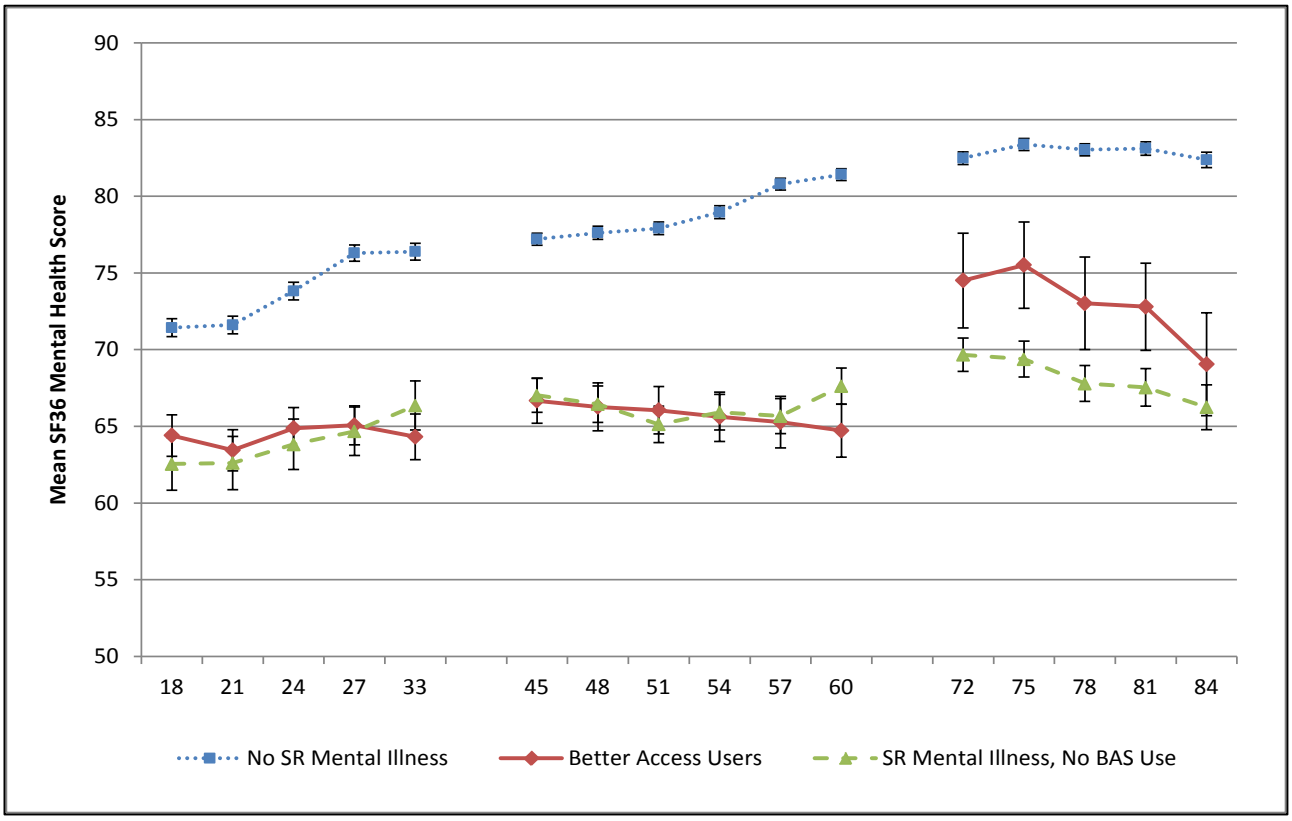

Figure 4-4 Mean SF-36 MHI scores and 95% confidence intervals for each survey for 1973-78, 1946-51 and 1921-26 cohorts.

4.5 Summary

- There has been a steady increase in the use of Medicare items under the Better Access Scheme (BAS) since their introduction in 2006.
- By December 2010, around 18% of the 1973-78 cohort; 10% of the 1946-51 cohort, and 3% of the 1921-26 cohort had claimed for at least one BAS Medicare item.
- Women who used the BAS in 1973-78 and 1946-51 cohorts were more likely to have private health insurance compared with women who reported a diagnosis of depression/ anxiety but were not treated under the BAS. For women in the 1921-26 cohort, those treated under BAS were less likely to have a pension card or private health insurance.

4.6 Discussion

Consistent with earlier evaluations of the Better Access Scheme, the data provided in this report show a steady increase in use of BAS items over time. The highest rate of use has been observed among women in the 1973-78 cohort, with almost 20% of the women having had an assessment for a mental health care plan under the BAS by December 2010. Comparison of uptake rates across the three cohorts indicates that the use of these services has not been evenly distributed across all age groups, although there has been an increase of use of services in all cohorts.

In terms of services provided under the BAS, other than the GP mental health plan which is a pre-requisite to referral, the main types of BAS service are the focussed psychological services provided by allied health providers. This finding no doubt reflects the workforce, and the observation by Pirkis et al. (2011) that 'Better Access has made private practice a more viable option for allied health professionals'. Nevertheless, ALSWH data suggest that access is somewhat inequitable with urban, better educated women in the 1973-78 cohort, those with private health insurance in the 1946-51 cohort and women without a pension concession card in the 1921-26 cohort being more likely to use BAS items.

4.7 References

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5 Socio-demographic factors associated with poor mental health

5.1 Introduction

The Fourth National Mental Health Plan (2009-2014) provides an agenda for collaborative government action in mental health, recognising the need for a whole of government approach that extends beyond the health sector to other portfolios. It recognises that poor mental health results from the complex interaction of a range of determinants including socio-economic, social, and environmental factors. It also acknowledges the importance of considering mental health issues across the lifespan and recognises that some people are more vulnerable than others (Commonwealth of Australia, 2009).

Section 5.2 of the current report provides statistical analyses of a broad range of factors associated with mental health using data from all ALSWH cohorts to identify potential differences based on stages of the life course. Section 5.3 provides further data on a few specific factors associated with poor mental health, demonstrating the complexity of these relationships.

Section 5.3 is based on previously published work so only a brief description of the methods and findings are given here. However, the full publication reference is provided for readers seeking more details.

5.2 Socio-demographic factors and psychological distress

The tables in this section summarise associations between socio-demographic factors (Table 5-1), health and health service use (Table 5-2), health behaviour (Table 5-3) and the combined effects of these factors (Table 5-4). Analyses are conducted separately for each age group and then the data combined across all age groups. The tables use arrows to indicate the probability or chance of having psychological distress for a particular category or group of women compared with a reference category or group of women (this latter usually represents a mainstream or most common grouping). A downward pointing arrow indicates that the probability of meeting the criterion for psychological distress is statistically significantly lower than in the reference group, whilst an upward pointing arrow indicates the probability is significantly higher. No arrow indicates that the sub-group does not differ from the reference group. The number of arrows indicates the strength of the association, with a greater number of arrows indicating a stronger relationship.

For some variables data were not collected for all cohorts (e.g., the older women were not asked work related questions) or the response categories were different between cohorts (e.g., response options regarding numbers of doctor visits).

Table 5-1 Demographic factors associated with poor mental health (SF-36 MHI ≤52).

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Area of residence			
Major city	reference	reference	reference
Inner regional			↓
Outer regional	↓		↓
Remote		↓	↓
Education			
University	reference	reference	reference
TAFE/College	↑	↑	
School only	↑↑	↑↑	↑↑
Country of Birth			
Australia	reference	reference	reference
Other English-speaking		↑	↑↑
Non-English-speaking	↑	↑↑	↑↑↑
Language spoken at home			
English spoken	reference	reference	reference
Non-English spoken	↑↑	↑↑	↑↑↑
Occupation			
Manager/Administrator	reference	reference	not available
Professional	↓		"
Associate professional		↑	"
Tradesperson or related		↑↑	"
Advanced clerical / service	↑	↑	"
Intermediate clerical, sales	↑	↑	"
Intermediate production/ transport	↑		"
Elementary clerical, sales	↑		"
Labourer or related worker	↑↑	↑↑	"
No paid job	↑	↑↑	"
Work/study			
Work only	reference	not comparable	not available
FT Study and work	↑	"	"
PT work		"	"
PT work and study		"	"
Study only	↑↑	"	"
Neither	↑	"	"
Hours Worked			
Full time	not comparable		not available
Part time	"		"

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Not in work force	"	↑↑	"
Manage on Income			
No difficulty	reference	reference	reference
Difficult sometimes	↑↑	↑↑	↑
Impossible/difficult	↑↑↑	↑↑↑	↑↑
Relationship Status:			
Never married	reference	reference	reference
De facto	↓		↑↑
Married	↓↓	↓	↑↑
Widowed/ Sep/ Divorced	↑		↑↑

Arrows indicate the strength of association. Upward arrows indicate greater probability of poorer mental health than in the reference group; downward arrows indicate less risk and no arrow indicates lack of statistically significant association. More arrows signify a stronger relationship.

Table 5-2 Health and health service factors associated with poor mental health (SF-36 MHI ≤52). Arrows indicate the strength of association.

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Self-rated general health			
Excellent	reference	reference	reference
Very good	↑↑	↑↑	
Good	↑↑↑↑	↑↑↑↑↑	↑↑↑
Fair/poor	↑↑↑↑↑	↑↑↑↑↑	↑↑↑↑↑
GP use in past year			
No visits	reference	reference	not comparable
1-2 visits			"
3-4 visits		↑	"
5+ visits	↑↑	↑↑	"
Specialist use in past year			
No visits	reference	reference	not comparable
1-2 visits	↑	↑	"
3+ visits	↑	↑↑	"

Arrows indicate the strength of association. Upward arrows indicate greater probability of poorer mental health than in the reference group; downward arrows indicate less risk and no arrow indicates lack of statistically significant association. More arrows signify a stronger relationship

Table 5-3 Health behaviour factors associated with poor mental health (SF-36 MHI ≤52)

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Body Mass Index (BMI)			
Health weight	reference	reference	reference
Underweight	↑	↑↑	↑↑
Overweight			
Obese	↑	↑	↑
Smoking status			
Never smoked	reference	reference	reference
Ex-smoker	↑	↑	↑
Current smoker	↑↑	↑↑	↑↑
Alcohol use			
Low risk drinker	reference	reference	reference
Non-drinker	↑	↑	↑↑
Rarely drinks	↑	↑	↑
Risky/very risky drinker	↑↑	↑	
Illicit drug use		Not asked	Not asked
Never	reference		
Past use		"	"
Recent use	↑	"	"
Level of physical activity			
High	reference	reference	reference
Moderate			
Low	↑	↑	↑↑
None	↑↑	↑↑	↑↑↑

Arrows indicate strength of association (or probability ratios) which are statistically significant at the p<0.05 level:

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);

↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

No arrow indicates that there is no statistically significant association.

Overall, the strongest and most consistent association with psychological distress was poor self-rated general health. Amongst the younger and mid-age cohorts, having difficulty managing on available income was also strongly associated with psychological distress. Amongst the older cohort, coming from a non-English speaking country, speaking a language other than English at home and reporting no exercise were most strongly associated with psychological distress.

Clearly, many of these factors are likely to be correlated with each other. Table 5-4 shows the same type of analysis, but in this case the association between each factor and psychological distress has been adjusted to take into account the influence of all other statistically significant factors. The analyses were conducted separately for each cohort and included data from all surveys. Variables strongly correlated with each other were excluded.

Table 5-4 Factors associated with psychological distress. Analysis adjusted for all factors together for each cohort (where possible). More arrows signify a stronger relationship.

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Area of residence:			
Major city	reference	reference	reference
Inner regional			
Outer regional	↓		
Remote			
Education:			
School only	reference	reference	reference
TAFE/College		↓	↓
University	↓	↓	↓
Country of Birth	Not used		Not used
Australia		reference	
Other English-speaking			
Non-English-speaking		↑↑	
Non-English language spoken at home		Not used	
English spoken at home	reference		reference
Non-English spoken	↑		↑↑
Work/study		Not available	Not available
Work only	Reference		
FT Study and work	↑	"	"
PT work		"	"
PT work and study		"	"
Study only	↑↑	"	"
Neither	↑	"	"
Hours Worked	Not used (see above)		Not available
Full time		reference	
Part time			"
Not in work force		↑	"
Manage on Income			
No difficulty	reference	reference	reference
Difficult sometimes	↑	↑↑	↑
Impossible/difficult	↑↑↑	↑↑↑	↑↑
Relationship Status:			
Never married	reference	reference	reference
De facto	↓		
Married	↓	↓	
Widowed/ Sep/ Divorced	↑		
BMI			
Healthy weight	reference	reference	reference

	1973-78 Cohort N=14,247	1946-51 Cohort N=13,715	1921-26 Cohort N=12,432
Underweight	↑	↑↑	↑↑
Overweight			↓
Obese	↑	↑	↓
Smoking status			
Never smoked	reference	reference	reference
Ex-smoker			↑
Current smoker	↑	↑	↑↑
Alcohol use			
Low risk drinker	reference	reference	reference
Non-drinker	↑		↑
Rarely drinks	↑	↑	
Risky/very risky drinker	↑↑	↑	
Illicit drug use		Not available	Not available
Never	reference		
Past use		"	"
Recent use		"	"
Level of exercise			Not used
High	reference	reference	
Moderate		↑	"
Low	↑	↑	"
None	↑↑	↑↑	"

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no statistically significant association.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

Adjusting for other factors generally reduced the strength of associations but some factors remained significantly associated with psychological distress. Across all cohorts, having a higher education level was associated with a lower probability of meeting the criterion for psychological distress. Across all cohorts, having difficulty managing on available income, coming from a non-English-speaking country and speaking a language other than English at home were all associated with greater odds of meeting the criterion for psychological distress.

Other socio-demographic factors were significant for some cohorts but not others. Amongst younger women, those who lived in outer regional areas and those who were married or in de facto relationships were less likely to meet the criterion for psychological distress than did those in the reference groups, while full-time students were more likely to meet this criterion. Amongst mid-age women, those who were married were less likely, and those not in paid employment were more likely to meet the criterion for psychological distress compared with the reference groups. Although certain occupations were associated with increased odds of poor mental health, when all factors were adjusted for, no specific occupations remained significantly associated with poor mental health.

Several of the health factors were associated with a higher probability of psychological distress across all cohorts. BMI, smoking and alcohol use were all significantly associated with psychological distress across all cohorts. Women who were underweight had higher odds of psychological distress. This association was present for all cohorts but was stronger for the mid-age and older cohorts. Younger and mid-aged women who were in the 'obese' BMI category had higher odds of meeting the criterion for psychological distress; however, the reverse was true for older women. Older aged women in the 'overweight' or obese categories had lower odds of psychological distress. Lower levels of physical activity were also significantly associated with meeting the criterion for psychological distress amongst mid-age and younger women. It should be noted that although BMI is listed under the category of health behaviours, we recognise that BMI is not always reflective of poor health behaviours. Causes of overweight and obesity are complex, sometimes involving, among many other factors, physical health problems (e.g., thyroid conditions) and treatments associated with mental health problems.

5.3 Specific factors associated with poor mental health

Socioeconomic characteristics and health behaviours are widely recognised as being associated with mental health outcomes (Fan, 2009; Beyoun, 2010). To better understand these relationships, three recent studies using ALSWH data are reported below.

5.3.1 Intergenerational education and mental health

Tooth and Mishra (2012) used data from the ALSWH younger cohort (born 1973-78) to compare the level of education achieved by the women in the study with the level of education achieved by their parents, in order to better understand the association between education background and mental health outcomes.

A sample of 5,619 women aged 31-36 years in 2009 from the 1973-78 cohort of the ALSWH were included in the study because they had completed all relevant questions. At Survey 2 in 2000, women were asked about the level of education their mothers and fathers had attained. To compute intergenerational mobility, this was compared against the level of education women reported attaining themselves at Survey 5 in 2009. Mental health at Survey 5 was assessed by using the SF-36 Mental Component Summary Score and the CESD-10.

After adjusting for the influence of factors known to be associated with mental health outcomes (factors included occupation and ability to manage on income; lifestyle factors such as smoking, body weight, alcohol consumption and exercise; and acute or chronic illnesses present in 10% or more of the women [respiratory illness and low iron]), this study found that greater downward mobility in women's education compared with that of their mothers and fathers was strongly associated with poorer mental health. For example, where mothers or fathers had a degree/higher degree and the young women had a year 12 or less school level education, the young woman was more likely to have poor mental health. More moderate downward mobility

from fathers (for example, where fathers had a degree/higher degree and the young women had a trade/certificate/diploma level education) was also associated with poorer mental health but not as strongly. Another strong influence on poor mental health was when the young women answered 'don't know/not applicable' about the level of education of their mothers and fathers. It is not known why respondents might not know the education level of a parent; such a response set could be reflective of a variety of circumstances. These findings show that there are subtle differences for same and opposite-sex parent-daughter relationships on the impact of downwards intergenerational educational mobility for mental health in young women.

5.3.2 Dietary pattern and mental health

A study by Rienks et al. (2012) using ALSWH data explored dietary patterns and subsequent depressive symptoms 3 years later among mid-aged women. Data from 6,060 women from the mid-aged cohort (born 1946-51) were used because these women had completed the Food Frequency Questionnaire (FFQ; Ireland et al., 1994) at Survey 3 and all questions from the CESD-10 at Surveys 3 and 4. Women were excluded from the study sample if they had poor mental health at Survey 3.

The FFQ includes questions about consumption of over 100 food and drink items. By grouping together items that were commonly reported together six dietary patterns were identified. Each woman was characterised by her percentage consumption of each dietary pattern. The six dietary patterns were found using the food survey data collected in Survey 3. These were labelled as follows: i) cooked vegetables, ii) fruit, iii) Mediterranean diet, iv) meat and processed meats, v) dairy, and vi) high fat sugar diets. Cooked vegetables included cauliflower, cabbage, Brussels sprouts, broccoli and green beans. Fruit included strawberries, pineapple, melon, apricots and mango. Mediterranean style diet included garlic, peppers, mushrooms, salad greens, pasta and red wine. Meat and processed meats included pork, bacon, sausages, and lamb. Dairy included cream cheese, low-fat cheese, yogurt, and skim milk. High fat and sugar included sweet biscuits, cakes, jam, meat pies and chocolate.

The food intake patterns at Survey 3 found to be significantly associated with depressive symptoms at Survey 3 were: Mediterranean style diet, meat and processed meat diet and dairy. When other factors known to be associated with depressive symptoms (socio-economic characteristics, total energy intake and body mass index) were also accounted for, only the Mediterranean style diet remained significant. A woman with a diet high in these foods (vegetables, salad greens etc.) had a lower probability of having depressive symptoms at the same survey. To explore whether dietary patterns at Survey 3 would affect depressive symptoms at Survey 4, women with depressive symptoms at Survey 3 were excluded from the analysis and the same results were found. That is, women eating a primarily Mediterranean style diet had lower risk of developing depressive symptoms three years later.

5.3.3 Smoking and mental health

Many of the factors associated with poor mental health may be both the cause and the effect of the mental health problems. Tobacco smoking is an example which was explored in depth by Leung et al. (2010) using ALSWH data.

A sample of 10,012 women born in 1973-78 who had completed some or all surveys and had not experienced a pregnancy during the study period were included in the analysis. Those experiencing pregnancies were excluded due to the influence pregnancy may have on smoking habits (i.e., many women either temporarily or permanently quit smoking while they are pregnant). Women were coded as 'never smoked' if they had never smoked more than 100 cigarettes in their lifetime and 'ex-smokers' if they had smoked more than 100 cigarettes in their lifetime but were not smoking at Survey 5. Other groupings included 'smoke less than 10 cigarettes per day (CPD)', 'smoke 10-19 CPD', and 'smoke ≥20 CPD'. Psychological distress was measured using the SF-36 MHI using a score of ≤52 to indicate psychological distress. Depressive symptoms were measured using the CESD-10 using a score of ≥10 to indicate depressive symptoms consistent with a diagnosis of clinical depression.

A strong relationship was found between current smoking habits and current poor mental health and this association became stronger with increased reported cigarette use. In addition, women who smoked had three times higher odds of having poor mental health at later surveys; and women with poor mental health had significantly higher odds of smoking at later surveys. These patterns of association remained even after adjusting for the influence of mental health history, smoking history and socio-demographic characteristics of education, relationship status and employment. This study concluded that the association between poor mental health and smoking demonstrated an inter-connected pattern of association whereby smoking affects mental health and mental health affects smoking.

5.4 Summary

Section 5.2 reports the odds of having psychological distress associated with a wide range of factors when considered individually as well as in combination. The following dot points highlight factors significantly associated with psychological distress after adjusting for the effects of other relevant factors:

- Socio-economic status factors of a lower level of education and not being able to manage on available income were associated with an increased risk of psychological distress for all cohorts.
- Health behaviours such as unhealthy BMI, smoking, lower levels of exercise and excessive alcohol consumption were all associated with an increased probability of psychological distress; however, the patterns varied between the age cohorts, especially for BMI and alcohol in older women.

- Being born in a non-English speaking country of birth or not speaking English at home, were associated with a greater risk of psychological distress for all cohorts.
- For mid-aged and younger women, not being in a relationship and not being in the workforce were associated with an increased probability of psychological distress.
- For younger women, studying was associated with psychological distress.

The following key findings were reported in Section 5.3 when specific socio-demographic factors were considered in more depth.

- Young women with significantly lower levels of education than their parents had higher risk of experiencing poor mental health. This effect was stronger for daughters and their mothers than daughters and their fathers. A puzzling finding was that women who did not know their parents' level of education also had poorer mental health; this finding requires further study to explore its potential meaning, as the reasons why women did not know the level of education for both parents remain unclear.
- A comparison of common dietary patterns found that eating a Mediterranean style diet (consisting of pasta, vegetables such as garlic, peppers, mushrooms, salad greens, and red wine) was associated with better mental health.
- Smoking was associated with increased odds of having poor mental health and this relationship was found to have an inter-connected pattern of association, whereby poor mental health was associated with subsequent smoking and smoking was associated with later poor mental health.

5.5 Discussion

5.5.1 Socio-demographic characteristics

The findings of this ALSWH study are consistent with other research demonstrating that socioeconomic disadvantage is associated with poor mental health. Two commonly used indicators of socio-economic status are education and income. These are both associated with poor mental health internationally (Hammarstrom et al., 2011; Kosidou et al., 2011) and in Australia (Byles et al., 2012). New ALSWH research, reported in section 5.3, shows women who achieve lower levels of education than their parents have a greater probability of developing depressive symptoms. This research provides new insights into the complexity of the relationship between education and mental health. No other studies have been found that explore this effect. Given that young Australian women are experiencing an upward trend in levels of education achieved compared with their parents (ABS, 2009), it is useful to understand that those young women not achieving this upward mobility are at increased risk of poor mental health outcomes.

It was found that not participating in the workforce was associated with increased odds of poor mental health, which is consistent with other studies (Fan et al., 2009; Andersen et al., 2009). It was also found, however, that demands of studying were associated with increased risks of poor

mental health, with or without full-time work. It is beyond the scope of this study to determine the cause of this association. A recent Australian study using the Household Income and Labour Dynamics in Australia (HILDA) data supported ALSWH findings, reporting that students were at increased risk of having moderate psychological distress compared with their community peers; and younger university students and those also in paid employment were at greater risk of having high psychological distress (Cvetkovski et al., 2012).

Being born in a non-English speaking country or not speaking English at home was associated with an increased probability of psychological distress among women in the 1946-51 cohort. Few studies of mental health include language or country of birth; however, a study of older Australians that considered a range of correlates with poor mental health reported that older age, education level and non-English speaking background had the strongest associations with poor mental health outcomes (Anderson et al., 2007).

Relationship status is a demographic characteristic that showed differing associations with psychological distress between ALSWH cohorts. For older ALSWH women there was no significant difference in their probability of poor mental health based on their relationship status; this likely reflects the fact that widowhood is much more common later in life. However, mid-aged women who were married experienced an increased probability of better mental health and younger women who were either married or in a de facto relationship experienced an increased probability of better mental health than those not in such relationships. These associations are explored further in Section 7, which explored the effects of social support on mental health.

5.5.2 Health behaviour risk factors

Several health behaviours have been associated previously with greater odds of depression or anxiety (Fan et al., 2009; Strine et al., 2008). In this smoking, excessive alcohol consumption, unhealthy weight and low levels of physical activity were associated with psychological distress. These behaviours, at face value, appear to be lifestyle choices that are changeable. However, the associations with poor mental health are complex; some lifestyle factors may be influenced by mental health status and may in turn influence mental health outcomes; that is, 'A' affects 'B' and 'B' affects 'A'. A better understanding of such a complex interconnection of influences is afforded by examining data collected longitudinally.

Few studies have longitudinal data to identify inter-connected associations such as the relationship found between smoking and poor mental health reported in section 5.3.3 using ALSWH data. This finding is supported by the recent research of Lenz (2010) who reported that 18-19 year old American students with a lifetime diagnosis of depression or treatment for depression were seven times more likely to smoke tobacco than students without such a diagnosis. The complex relationship between smoking and poor mental health is also consistent with studies of current smokers and those attempting to stop smoking. For example, Australians

who are current smokers or who are unsuccessful in quitting attempts had a greater probability of having psychological distress (Leung et al., 2011).

The relationship between body mass index (BMI) and poor mental health is also complex. ALSWH research found that in all cohorts, being underweight was associated with an increased probability of poor mental health, consistent with other large general population studies (Kelly et al., 2011; de Wit et al., 2009). ALSWH data also indicated that younger and mid-aged women had an increased probability of poor mental health if they were obese. This pattern has been found in other large population-based studies both in Australia (Kelly et al., 2011) and internationally (de Wit et al., 2009). The fact that being both under-weight and over-weight is associated with poorer mental health outcomes reflects a more complex relationship between weight and health than a simple linear relationship. In an earlier ALSWH study, young women who were overweight or obese had an increased probability of developing depressive symptoms at later surveys. The same study also found that increased physical activity was associated with a lower probability of depressive symptoms at later surveys; which suggests an inter-connected pattern of association where 'A' affects 'B' and 'B' affects 'A' (Ball et al., 2009). Another earlier ALSWH study found both weight gain and weight loss were associated with later poor mental health among mid-aged women (Williams et al., 2006). From this research it can be seen that a complex relationship exists between BMI and mental health.

Physical activity has been recognised as influencing both BMI and mental health (Beyoun et al., 2010). Low levels of physical activity were reported in Section 5.2 to be associated with a greater probability of poor mental health. An earlier ALSWH study considered the effect of changes in physical activity levels on later mental health in mid-aged women, finding high levels of physical activity associated with lower probability of having poor mental health at later surveys. This association remained after adjusting for the influence of previous physical and psychological health (Brown et al., 2005).

Another changeable lifestyle choice is diet. Section 5.3 reported ALSWH research into dietary patterns and their association with subsequent mental health. Findings indicated that a 'Mediterranean-style' diet was associated with a lower probability of developing depressive symptoms three years later. These findings suggest that this type of diet (high in vegetables, garlic, peppers, etc.) may be protective in preventing or managing depressive symptoms (Rienks et al., 2012).

5.6 References

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6 Perinatal mental health

6.1 Introduction

Mental health during the perinatal period – commonly defined as the time from conception to the end of the first postnatal year – is a major public health issue, with clinical depression affecting up to 15 % of women at this time (Gaynes et al., 2005; WHO, 2009). Although historically there has been a focus on postnatal depression, more recent studies suggest that antenatal depressive symptoms are as common as postnatal symptoms, that almost 30% of postnatal depression begins in pregnancy and that perinatal depression is associated with comorbid anxiety disorders in approximately 40% of cases (Austin& Priest, 2004; Milgrom et al., 2008; Austin et al., 2010). There is growing evidence of the negative impact of poor mental health outcomes not only for the mother but also for her child and family (e.g., Murray et al., 1996; O'Connor et al., 2002; Halligan et al., 2007; WHO, 2009).

6.2 Psychosocial assessment in the perinatal period

Psychosocial assessment in the perinatal period comprises clinical evaluation of a broad number of psychosocial risk factors that may contribute to mental health outcomes of a woman and her infant. This includes a history of depression, partner and/or social support, past or current history of abuse, and recent life stresses (Austin & Priest, 2005; Milgrom et al., 2008; Lancaster et al., 2010). Psychosocial assessment may be enhanced by the inclusion of relevant screening tools such as the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) which screens for current distress and depressive symptoms.

Psychosocial assessment for perinatal women is being increasingly advocated as an avenue for early identification of known risk factors for poorer mental health outcomes, and for those in need of extra support or requiring further in-depth assessment, in order to facilitate the offer and provision of appropriate management options. Key national initiatives which endorse this prevention and early intervention approach include the National Action Plan for Perinatal Mental Health (*beyondblue*: The national depression initiative, 2008), the National Perinatal Depression Initiative (NPDI; 2008-2013 Australian Government Department of Health and Ageing), and the NHMRC endorsed *beyondblue* Clinical Practice Guidelines for Depression and Related Disorders in the Perinatal Period (Austin, Highet et al., 2011). The 2011 Guidelines recommend routine administration of the EPDS and also suggest, as a good practice point, that all women be provided with psycho-education and be asked about their mental health history, level of support, recent life stressors, drug and alcohol use and past or current experience of abuse

The ALSWH sub-study of perinatal psycho-social assessments described below reports on participation rates and equity of access to perinatal psychosocial assessment. It also reports the impact of psychosocial assessment on rates of referral to additional treatment or support for current emotional health issues. This sub-study was supported by research funding provided by

the Bupa Health Foundation. (Grant details: Austin M-P, Reilly N, Loxton D, Milgrom J, Chojenta C. Perinatal mental health assessment: does it improve maternal health outcomes? Research Project; Funded by the Bupa Health Foundation, 2010-2012).

A sample of 1,804 women born 1973-78 were included in the sub-study because they had completed Survey 5 and had given birth to a child during or after August 2007. All data were collected between January and July 2011. Respondents were asked questions in relation to their youngest child and the pregnancy for that child. These data were used for the *antenatal* analyses. A sub-set of 1,442 women from this sample were used for the *postnatal* analyses because their youngest child was aged 12 months or older.

The following domains of psychosocial assessment are included in these analyses: current emotional health, mental health history, current level of support, current drug or alcohol use and past or current experience of domestic violence or abuse. In addition, receipt of psycho-education was included. In combination, these domains reflect the components of psychosocial assessment addressed in key Australian initiatives, including the NHMRC 2011 Practice Guidelines (Austin et al., 2011). Women were also asked where they had given birth. The data were grouped into three categories: public (public hospital and birthing centre); private (private hospital and private patient at a public hospital); other (at home/other). More than half the women had private maternity care, providing a unique opportunity to examine perinatal psychosocial assessment in the private maternity sector relative to the public maternity sector. In addition, women were asked if they were 'given a referral for additional treatment, help or support for emotional issues' by their health practitioner/s (general practitioner; obstetrician; midwife; other), with yes/no response options for both pregnancy and the 12 months following birth.

The proportion of women who reported receiving psychosocial assessment during the antenatal and postnatal periods is presented in Figure 6-1. Approximately 80% of women reported receiving perinatal mental health information at least once during pregnancy and/or in the 12 months following birth. Similar proportions of women reported being asked about their current emotional health in the antenatal and postnatal periods. Around 70% of women reported being asked about their level of support both before and after birth.

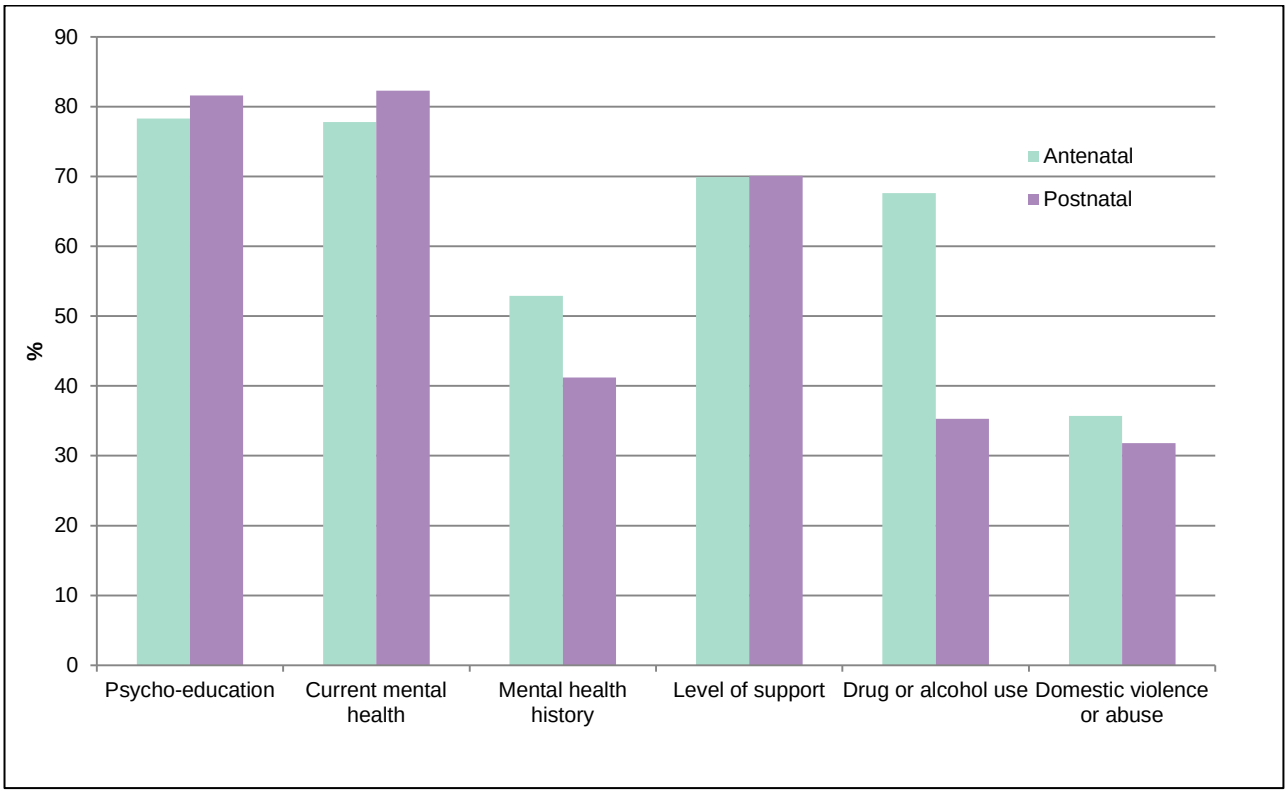

Figure 6-1 Percentage of women reporting psychosocial assessment in the perinatal period.

In contrast, only 53% of participants reported being asked about their mental health history at least once during pregnancy, with rates for this component of psychosocial assessment dropping to 41% across the first postnatal year. Two-thirds of women were asked about drug or alcohol use during pregnancy compared with approximately one third during the postnatal period. Only one third of women were asked about their experience of domestic violence or abuse during pregnancy in the postnatal period.

In the antenatal period, women who gave birth in public hospitals were more likely to be asked about aspects of their psychosocial functioning, such as their current mental health, mental health history, level of support, drug or alcohol use and experience of violence, than women who gave birth in the private sector (see Figure 6-2). These differences were less pronounced in the postnatal period.

Women with more than one child and those from non-English speaking backgrounds were at particular risk of not being assessed across various psychosocial domains. During pregnancy, women who had given birth previously were less likely to receive psycho-education or be asked about their mental health history or drug and alcohol use compared with women giving birth for the first time. Women of non-English speaking backgrounds were assessed for drug or alcohol use less often and were also less likely to receive psycho-education than women of English-speaking backgrounds. Women with lower educational levels were less likely than more educated women to be asked about their mental health history during the antenatal period.

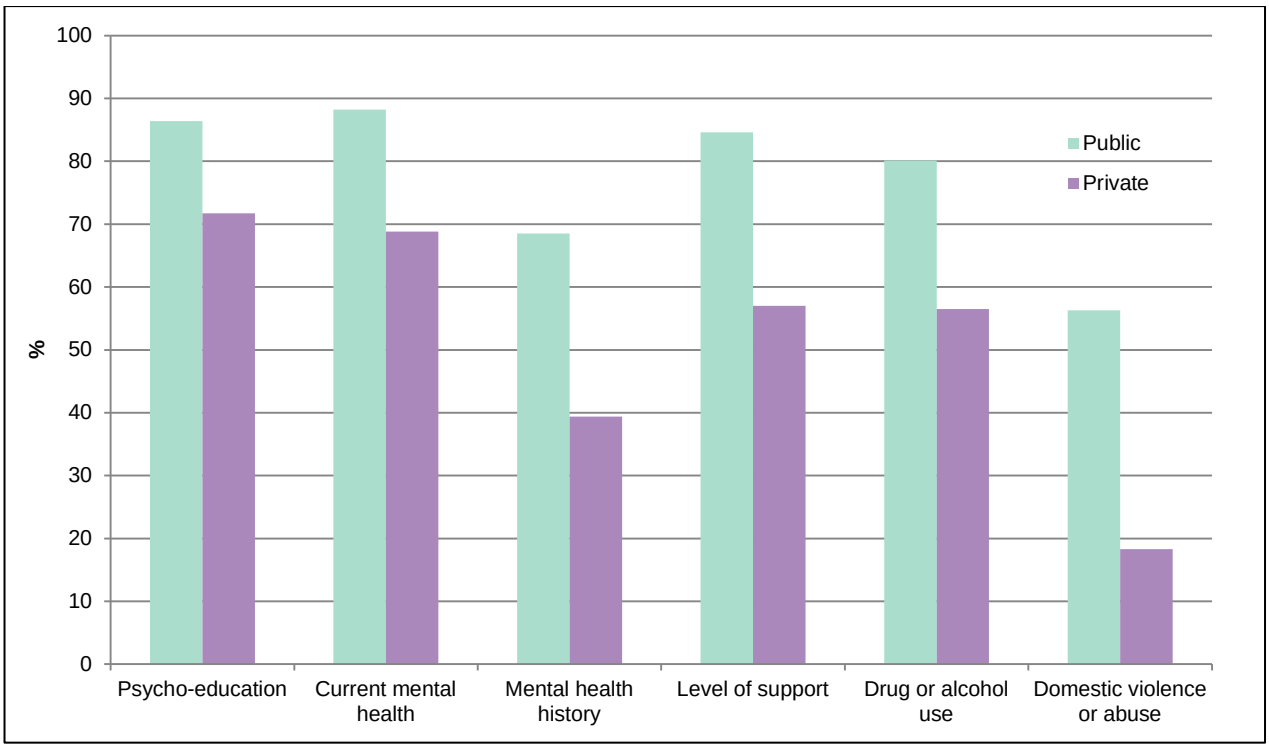

Figure 6-2 Percentage of women reporting psychosocial assessment during pregnancy, by public or private maternity hospital.

Postnatally, women who had given birth more than once were less likely to be asked about their current mental health or level of support, or receive psycho-education, than first-time mothers. Women of non-English speaking backgrounds were less likely to be asked about their current mental health than English-speaking women.

This study did not find disparities in reported psychosocial assessment across other socio-demographic indicators, including partner status, income management, employment status or area of residence, during either pregnancy or the postnatal period.

With regard to referrals for 'additional treatment, help or support for emotional issues' by their health practitioner/s during pregnancy and the 12 months following birth, rates of referral were similar for the antenatal and postnatal periods (14% and 17%, respectively). However, during pregnancy, the likelihood of referral was more than four times greater amongst women who were asked about their past mental health history compared with those who were not. In the postnatal period, women who were asked about their mental health history were nearly six times more likely to receive a referral than those who were not. Women who were asked about their current mental health were twice as likely to receive a referral during pregnancy and nearly three times as likely to be referred in the postnatal period, compared with women who were not.

During pregnancy, other factors were significantly associated with an increased likelihood of receiving a referral for additional treatment or support: experiencing emotional distress in the perinatal period (index child), lower education, giving birth in the public maternity sector and a reported history of depression, anxiety or other mental health issue. In the postnatal period, emotional distress in the perinatal period and educational level were the only additional factors significantly associated with referral. A number of other socio-demographic factors including partner and employment status, income management, language background and area of residence were not associated with referral for additional treatment or support in this analysis.

6.3 Post natal depression

In a clinical setting, postnatal depression (PND) is identified using either DSM-IV or ICD-10 diagnostic criteria where the symptoms presented match the criteria for major or minor depressive disorder and where they occur within either six (ICD-10) or four (DSM-IV) weeks of childbirth. The symptoms must have continued for at least two weeks. The symptoms experienced typically include low energy, irritability, reduced concentration and feelings of guilt (NHMRC, 2000).

6.3.1 Prevalence of Postnatal depression

The reported prevalence of PND varies depending on the manner of data collection; current estimates put the percentage of mothers who are affected by PND at between 10 and 20% in Australia. The prevalence of PND in the ALSWH 1973-78 cohort was assessed for each birth. For example, at Survey 5 in 2009 PND had been experienced by 15.7% of mothers.

6.3.2 Factors associated with postnatal depression

There were 8,200 participants who completed Survey 5 when they were aged 31-36 and of these, 5,219 reported ever giving birth to a child, with a total of 10,407 births reported. Participants were asked to provide the date of birth for each of their children and then to answer a series of pregnancy, labour and postnatal questions for each child.

The following analysis examined individual births, and also developed a history profile for each mother - i.e., if a mother reported experiencing gestational diabetes during the pregnancy of Child 1, the 'history of gestational diabetes' variable for Child 2 and any subsequent children would be set to 'yes'. Therefore the term 'index child' refers to each individual child in the analysis, where the family histories and relationships were taken into account.

A large range of risk factors were investigated for a relationship with postnatal depression including demographics, health behaviours, pregnancy-related health conditions, events around labour (for index child and for any previous children), social support, physical health and previous mental health. Only those factors that were significant in the preliminary analysis are presented in the following section.

Figure 6-3shows the results for pregnancy, birth and postpartum factors for the index child. When all other factors were taken into account, the pregnancy, birth or postpartum factors that were significantly associated with PND including: being diagnosed or treated for antenatal anxiety, being diagnosed or treated for antenatal depression, experiencing emotional distress during labour, being diagnosed or treated for postnatal anxiety and breastfeeding that child for less than six months.

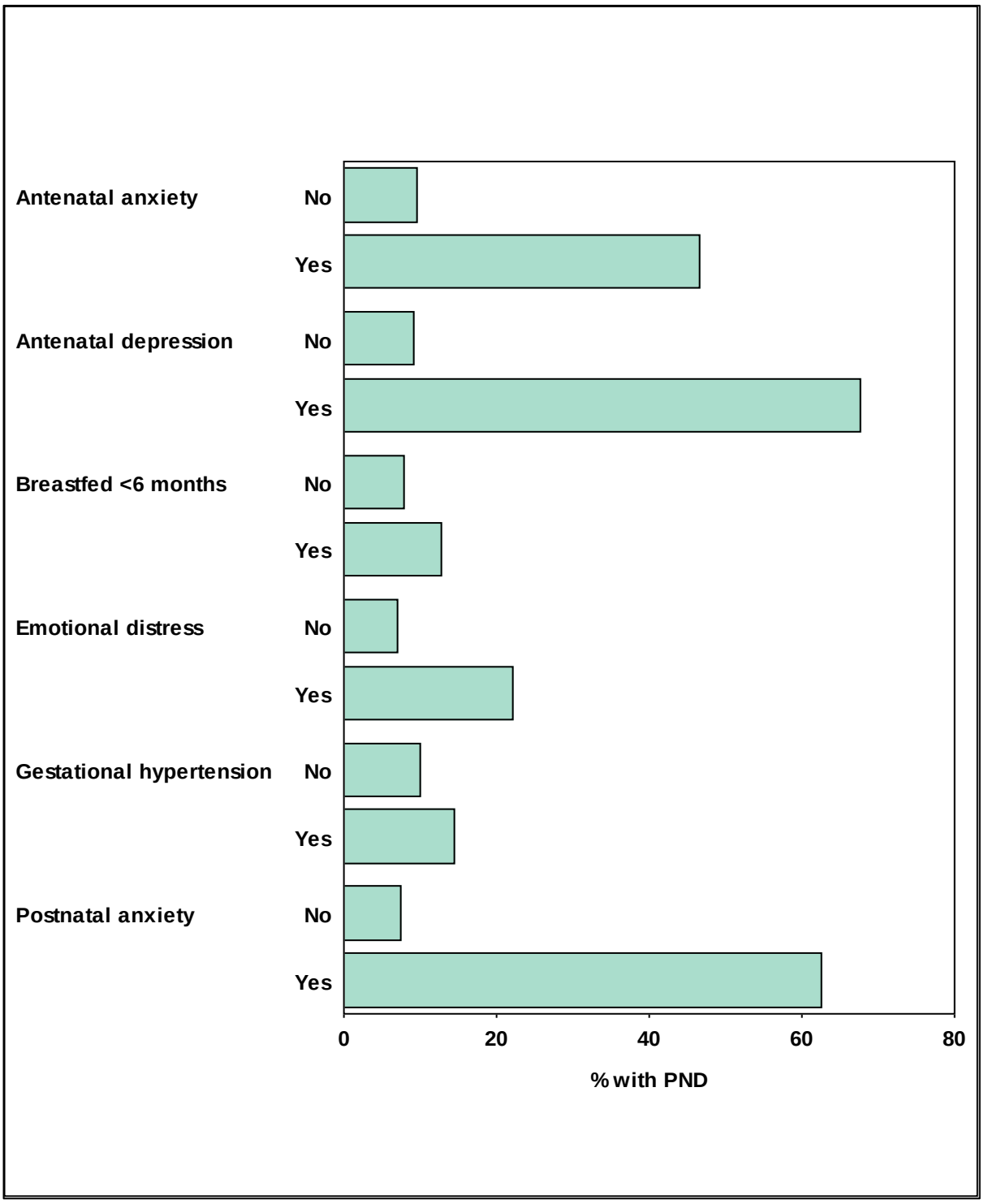

Figure 6-3 Percentage of women with post natal depression for each response option to questions related to pregnancy, childbirth and postpartum factors related to that pregnancy (index child).

There were trends of increasing risk of PND with: lower levels of social support; demographic factors (area of residence, education, partners status, income stress); experiencing more life events; having a history of risky drinking; and reporting poorer general health before the birth. However, these factors were not statistically significant (See Figure 6-4and Figure 6-5).

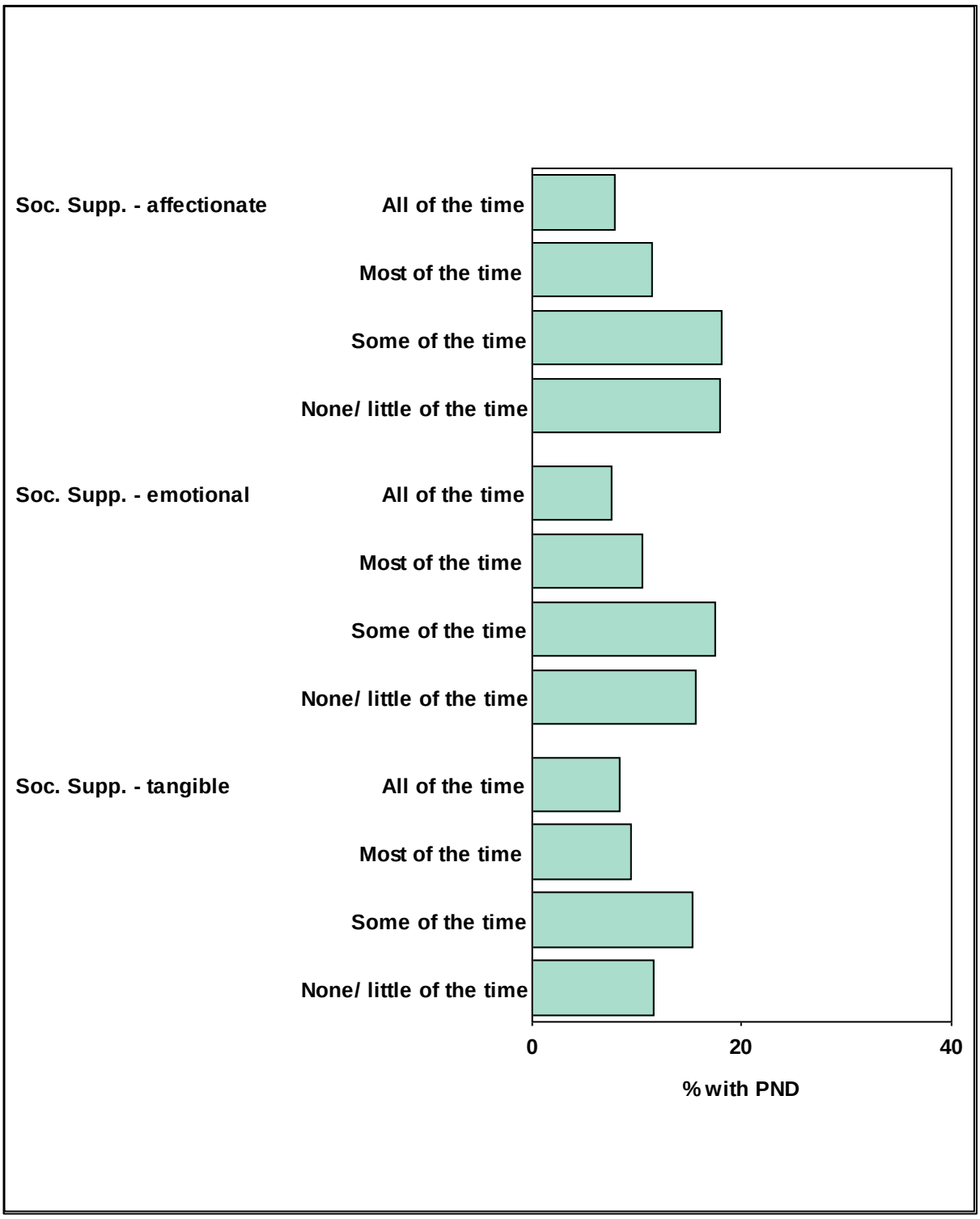

Figure 6-4 Percentage of women with PND for each response related to social support (from survey most recent to birth).

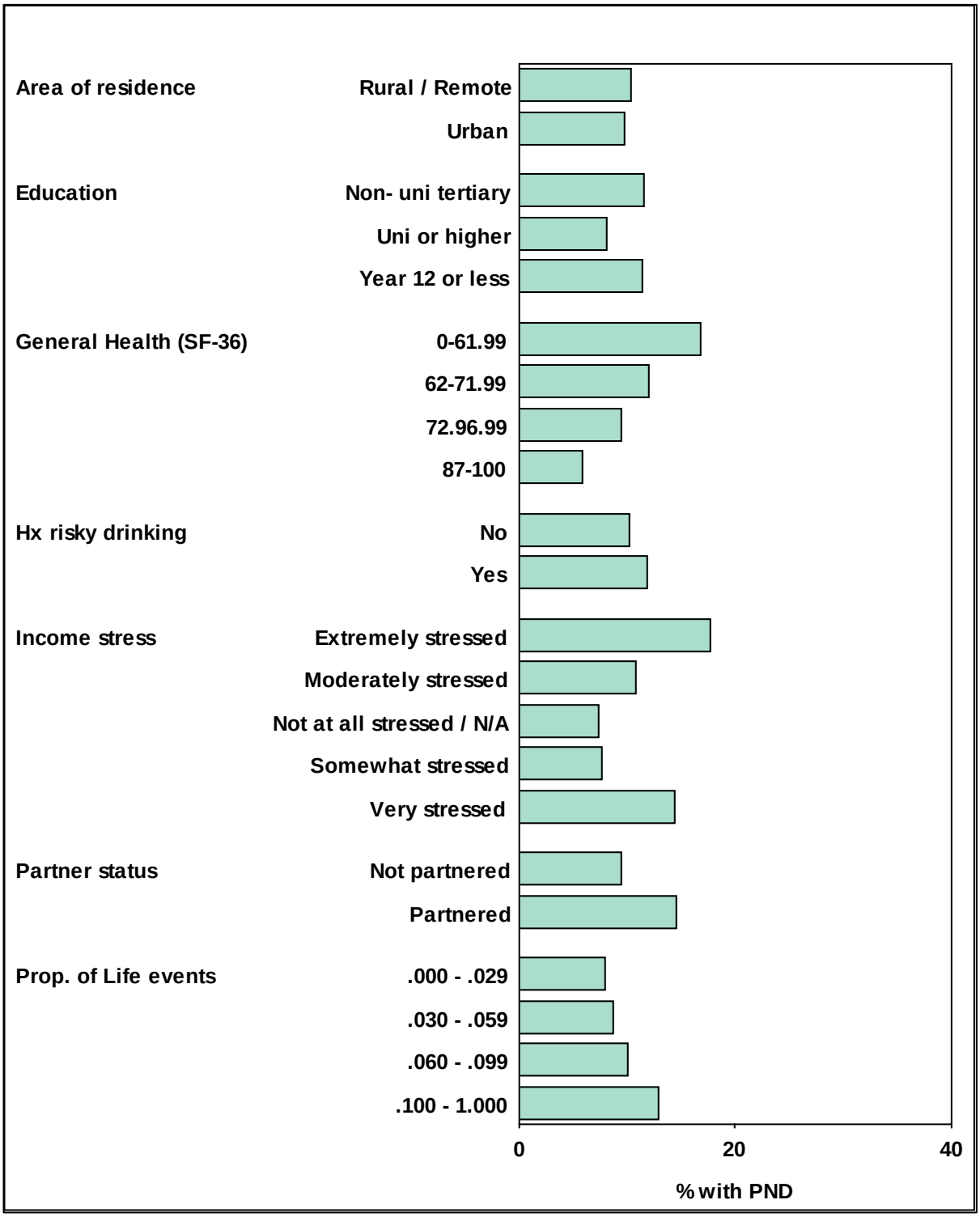

Figure 6-5 Percentage of women with PND for each response related to other risk factors (from survey most recent to birth).

Having a history (Hx) of PND or anxiety at previous births was predictive of subsequent PND. The greatest risk factors for postnatal depression were a history of depression or anxiety (see Figure 6-6). Trends were also detected for ever self-harming or having suicidal ideation, having poorer mental health, more stress, less optimism (measured by the Life Orientation Test [LOT]), and ever living in a violent relationship, however these factors were not statistically significant.

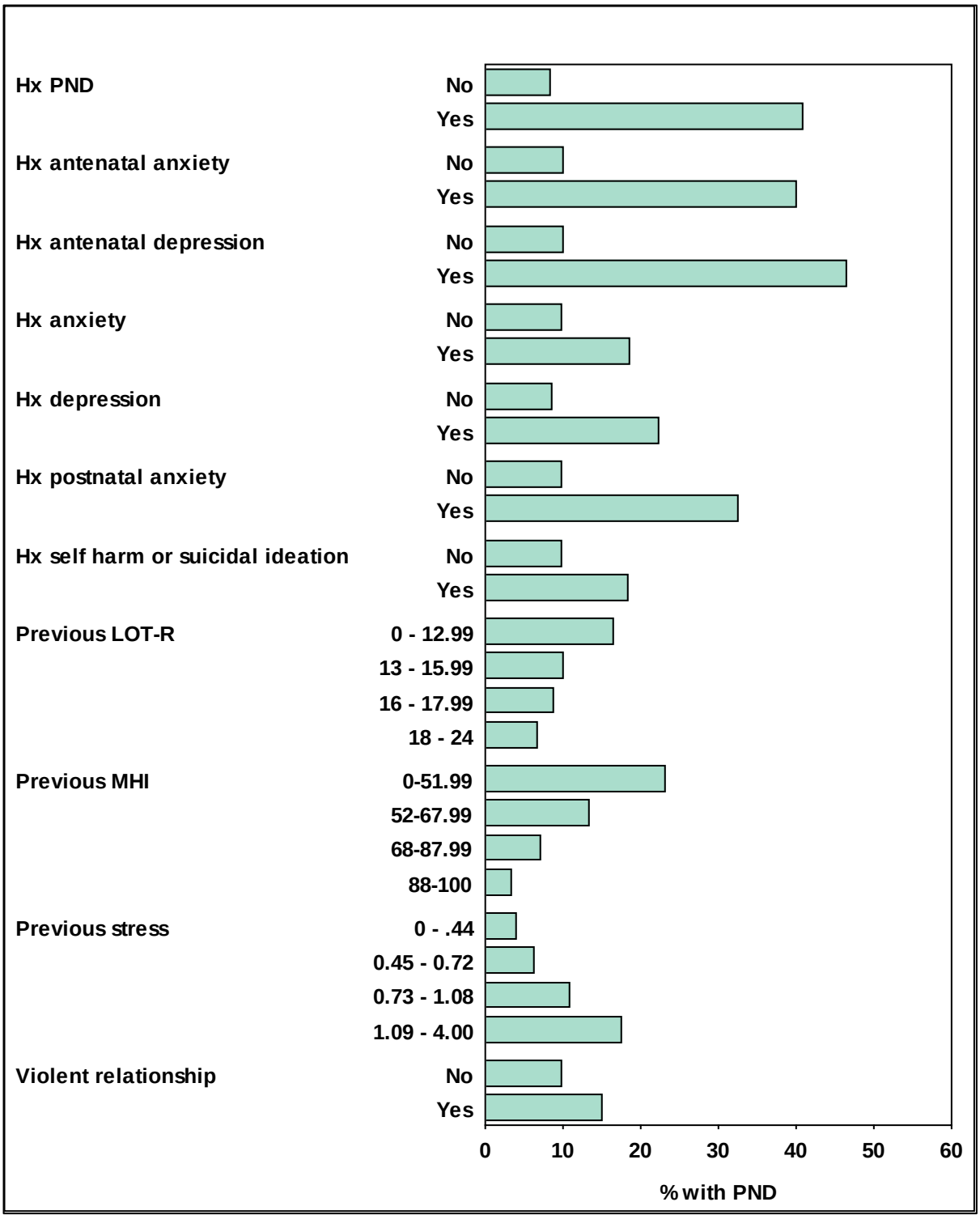

Figure 6-6 Percentage of women with PND for each response related to mental health history.

6.4 Summary

- Only 53% of women were asked for their mental health history in the antenatal period and only 41% were asked in the postnatal period.
- Those receiving care through public hospitals were more likely to be asked about all domains of psychosocial assessments compared with women receiving care in private hospitals.
- Women who had experienced previous births were less likely to be assessed across several psychosocial domains, including their current or previous mental health.
- Women from non-English speaking backgrounds and women with lower education were less likely to be asked about their mental health history.
- Those women who were asked about their mental health history were more likely to be referred to support services.
- Antenatal anxiety or depression, emotional distress during the birth and postnatal anxiety were the strongest risk factors for postnatal depression. Between 46% and 68% of women reporting these conditions experienced postnatal depression.
- A history of perinatal anxiety or depression indicated a high level of risk for postnatal depression with subsequent births. Between 32% and 45% of women reported these conditions.
- Findings were inconclusive for a cause-effect relationship between breastfeeding and postnatal depression as it is unclear whether postnatal depression preceded or followed breastfeeding problems. Further research is required into this area in order to examine causality.

6.5 Discussion

Analyses of ALSWH data show that there are significant disparities in reported psychosocial assessment by maternity hospital sector, parity, education level and language, and that these differences are more pronounced in the antenatal period than in the postnatal period. Of particular concern is demonstrated shortfall in assessment rates in the private maternity setting, particularly during pregnancy. This is not consistent with recommendations for good practice as endorsed by the 2011 Guidelines (Austin, Highet et al., 2011) by RANZCOG (Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Endorsed March 2012).

This study also shows that particular domains of psychosocial health (e.g., current emotional health) were more likely to be assessed than others (e.g., past mental health history or experience of domestic violence or abuse).

With respect to referral for mental health issues, our results showed that between 14% and 17% of women were referred across the perinatal period. The role of psychosocial assessment, in particular assessment of mental health history, in facilitating referral is evident. Importantly, the

current findings suggest that in terms of referral activity, reported responses to mental health issues identified by health professionals during pregnancy or the postnatal period are in keeping with the good practice points described in the aforementioned Guidelines (Austin, Highet et al., 2011).

In terms of risk factors for PND, the strongest predictors were other mental health conditions, and antenatal anxiety and depression were found to be particularly strong predictors. These findings indicate that antenatal screening and treatment for mental health conditions may be key to reducing the number of women who experience PND.

Contrary to previous findings, demographic measures (Boyce 2003; Lancaster, Gold et al., 2010) and social support were not related to PND in a multivariate model. These results indicate that there are no unique associations between these factors and PND when other factors are taken into account. Therefore, understanding a woman's mental health history holds a very important role in the detection of those who are most vulnerable to PND. These findings also indicate that treatment and management of depression and anxiety earlier in life may have a positive impact on the incidence of PND.

This series of studies provides an important contribution to the evidence-base relating to lifetime risk factors for postnatal depression, and how key Australian perinatal mental health early intervention initiatives are being conducted. Of particular concern is that although mental health history was identified as a key risk factor for postnatal depression, only half the women in our sample reported being asked about this during pregnancy, decreasing to just two in five women in the first year following birth.

A recent report has revealed that not treating perinatal depression and anxiety could cost Australia almost $500 million by the time the children turn two (*beyondblue*: the national depression initiative 2012). The health service systems in place for routine maternal and infant care in Australia afford a unique opportunity to introduce routine depression screening and psychosocial assessment, with a view to improving early identification of risk, engagement with services and health outcomes at this critical time. This opportunity needs to be widely embraced across both the antenatal and postnatal periods, and across the public and private maternity sectors alike.

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7 Interpersonal relationships and mental health

7.1 Introduction

Interpersonal factors play an integral role in the onset, maintenance and remission of mental health conditions (King-Casas et al., 2012). Significant negative life events are associated with subsequent poor mental health; this relationship between life events and mental health can be either buffered or worsened depending on the individual's sense of self-worth and interpersonal relationships (Kopala-Sibley, 2010). This section considers associations with poor mental health for three key aspects of interpersonal relationships. First, intimate partner violence (IPV) and its association with mental health is explored. IPV has been reported to be associated with stress, social isolation and poverty, and, aside from the impact to physical health, can lead to post-traumatic stress disorder, depression and other emotional difficulties (Goodman, 2009). Conversely, mental health problems have also been identified as risk factors for IPV (Kropp, 2008). Although this report focuses on IPV we acknowledge the importance of other forms of violence, such as childhood abuse and sexual abuse, and their negative impacts on mental health.

Next the relationship between being a carer and mental health outcomes is considered. Government policies in recent decades promote community-based rather than institutional care. This has resulted in an increased need for informal carers. Some demographic trends have also increased the demand for carers, such as ageing baby boomers increasing the number of people needing care (AIHW, 2004), as well as the decreasing percentage of women able or willing to leave the workforce to provide care (Access Economics, 2010). There is evidence that carers are more at risk of mental health problems (AIHW, 2004); thus a better understanding of this association and the various factors related to it is important for providing effective support for this group of women.

Finally this report considers the mental health consequences of poor social support and whether an interconnected pattern of association occurs between social support and mental health; that is whether mental health affects social support status and whether social support affects mental health status. The recent Australian Social Inclusion Policy demonstrates the government's commitment to and understanding of the importance of social connectedness for health and well-being (Australian Government, 2010). Therefore a better understanding of these interactions can support the implementation of this new policy.

In Section 7.2 and 7.3 the mean score of the SF-36 Mental Health Index 5-item subscale (MHI) is used. The MHI has a score ranging from 0-100 with a high score indicating good mental health. In section 7.4 we use the MHI with a cut-point of ≤52 to differentiate those who do and do not meet the criterion for psychological distress. The arrows presented in tables 7.4 to 7.7 indicate the

strength of the associations with psychological distress. That is, the greater the number of arrows the greater the chances of meeting the criterion for psychological distress.

7.2 Intimate partner violence

7.2.1 Introduction

The first national data collection concerned with intimate partner violence was the Woman's Safety Survey conducted in 1996 (ABS, 1996). Findings indicated that 23% of Australian women experienced physical violence perpetrated by a partner or spouse. Using a broader definition of violence in the context of intimate relationships, the 2004 International Violence Against Women Survey found a lifetime prevalence of 31%, a 5 year prevalence of 12% and a 12 month prevalence of 3% among Australian women (Mouzos & Makkai, 2004).

For the purposes of this report, intimate partner violence (IPV; also called domestic violence) is defined as the existence of a violent relationship between partners or spouses, as reported by the woman. This is a conservative measure of IPV, relying on the ability of the woman to both identify the intimate relationship as violent and to report this perception in an ALSWH survey.

There is a large body of literature that has described associations between IPV and poor mental health, including post-traumatic stress disorder, depression and anxiety. For example, two recent systematic reviews of IPV and mental health reported associations between domestic violence and anxiety and depressive disorders, as well as post-traumatic stress disorder (Trevillion et al., 2012; Dillon et al., 2013). The same reviews also highlighted the need for longitudinal research in this area - a gap that analyses of ALSWH data can help to fill. Section 7.2.2 examines mental health in relation to the onset of IPV in the 1973-78 ALSWH cohort and 7.2.3 explores mental health in relation to the cessation of IPV in the 1946-51 ALSWH cohort.

7.2.2 Mental health relative to first onset of intimate partner violence

This analysis included data from 5,766 women in the young cohort (born 1973-78). Data were included for women who completed all five surveys and who endorsed the items that asked about IPV. Data from women who reported IPV at Survey 1 in 1996, but who later reported that they had never lived with a violent partner or spouse, were later excluded from the analyses, leaving data from 5,129 women.

To examine IPV and mental health among the 1973-78 cohort, women were categorised into one of four groups based on their responses to the item that asked if they had ever lived in a violent relationship with a partner or spouse (at each survey). Groups were defined as:

- Women who had never experienced IPV
- Women who reported IPV from the start of the study and at each of the four following surveys (1996, 2000, 2003, 2006, 2009)
- Women who first reported IPV early in the study period, between 1997-2003 (at Survey 2 or 3)
- Women who first reported IPV later in the study period, between 2004-2009 (at Survey 4 or 5)

Table 7-1 shows the demographic and health characteristics of the women in these groups as measured at Survey 5. The 79% of women who had never experienced IPV were the most likely to be married, to have tertiary qualifications, to be non-smokers and non-drinkers and to have the best health. The 3% of women who reported IPV at the start of the study in 1996 reported the poorest health, with the 7% who had experienced IPV for the first time early in the study period and the 10% who first reported IPV later in the study period showing only slightly better physical function than those women who reported IPV at every survey.

Results for smoking were interesting, with current smokers representing over a third of those women who first experienced IPV before survey 1 in 1996, about one in four of those who first experienced IPV early in the study period and 16% of those who first experienced IPV later in the study period. This compares with only 9% of women who had never experienced IPV reporting tobacco use. Demographically, those who had experienced IPV the earliest were the most likely to have less than HSC level qualifications and to have difficulty managing on their available income.

Table 7-1 Socio-demographic and health characteristics in 2009 (survey 5) of women born in 1973-78 by experience of intimate partner violence (IPV)

	Never IPV	First IPV by 1996	First IPV between 1997-2003	First IPV between 2004 -2009	X^2- Test
	79%	3%	7%	1%	
Urban area of residence	69	58	62	71	0.002
Marital status					
Married/de facto	85	72	70	33	
Separated/divorced	4	6	10	8	<.0001
Widowed/single	11	22	20	59	
Education qualifications					
<HSC	5	17	8	8	
HSC	11	16	16	13	<.0001
Tertiary qualifications	84	67	76	79	
Manage on income	65	40	51	58	<.0001
Smoker	9	34	24	16	<.0001
Alcohol use					
Non drinker	85	79	82	78	
Low/Rare drinker	12	14	13	16	<0.002
Risky/High drinker	3	7	5	6	
No. diagnosed conditions					
None	72	58	64	67	
1-2	23	30	27	25	<.0001
>2	5	12	9	8	
	Mean standard deviations				
SF-36*					
Physical Function scores	91.4(14.6)	86.3(19.2)	88.1(16.6)	87.4(17.5)	
General Health scores	76(17.6)	64(22.5)	70.6(20.7)	68.5(20.5)	

*The SF-36 is a measure of health related quality of life, where higher scores reflect better health.

Figure 7-1 shows the mental health of women in the younger cohort (born 1973-78) using the SF-36 Mental Health Index score, where higher scores reflect better mental health. Women who had never experienced IPV had the best mental health at all survey time-points, which was similar to the population norm. Women who had experienced IPV by the first survey (1996) had the poorest mental health throughout the study period (indicated by the orange line). Those who first experienced IPV later in the study period had slightly better mental health in Surveys 1 -3 than those who first experienced IPV earlier in the study period. But these differences were not statistically significant because the vertical lines indicating 95% confidence intervals were overlapping. In addition, it is worth noting that women who had not experienced IPV but who later went on to do so had poorer mental health prior to IPV, compared with women who had never experienced IPV.

Women who experience IPV appear to start off with poorer mental health relative to women who have never experienced IPV but better mental health than women who first experienced IPV at a younger age

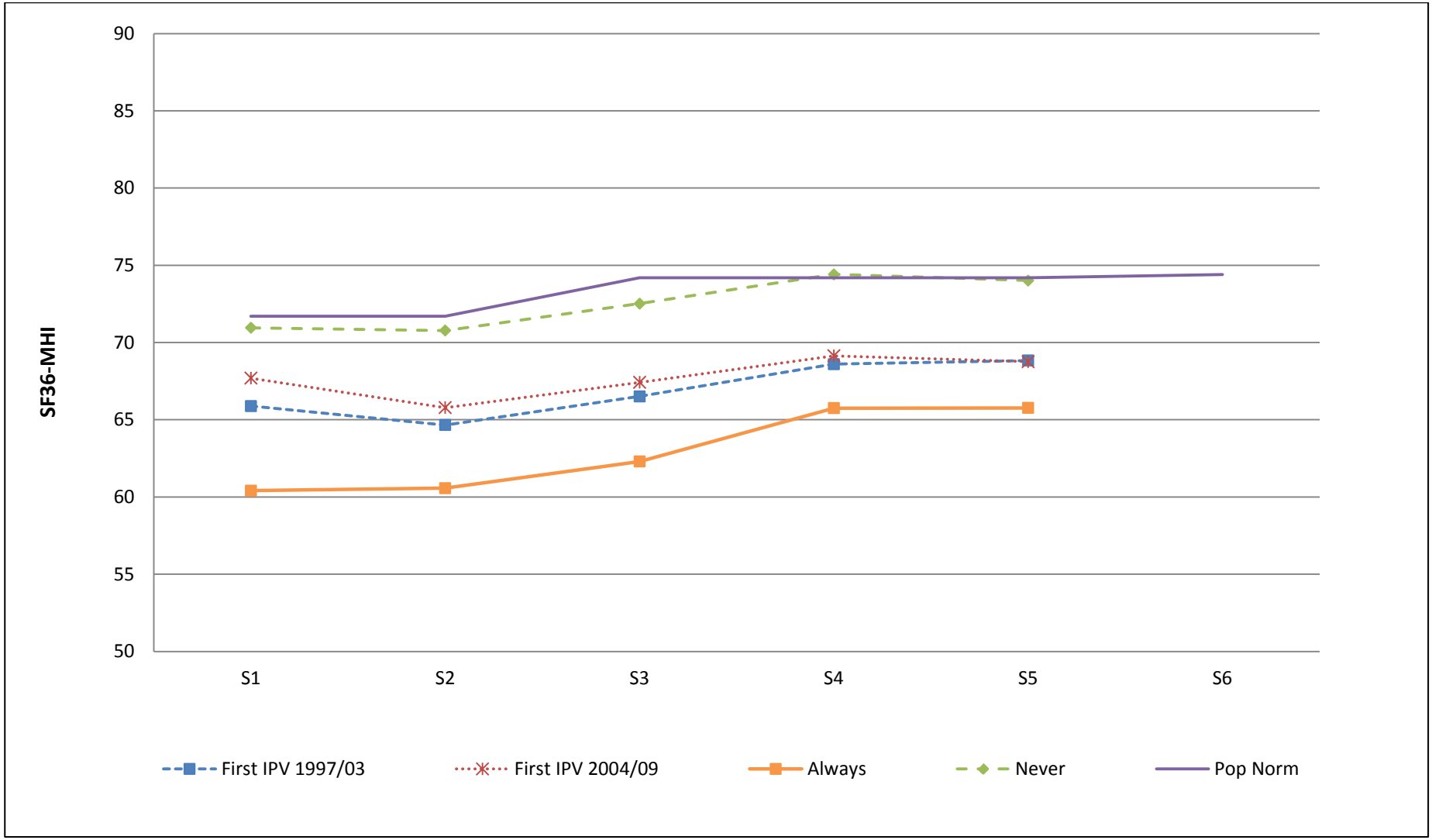

Figure 7-1 Mental health of women in the 1973-78 cohort by IPV status.

7.2.3 Mental health after cessation of intimate partner violence

Many of the women from the 1946-51 cohort have experienced separation or divorce, which suggests that for some women in this cohort, IPV will have ceased. To assess the impact of ending IPV, a retrospective measure of IPV was employed at Survey 5 (2007) to ascertain when IPV had ceased. Table 7-2 shows the demographic and general health characteristics of 10,315 women in this cohort based on when they had last experienced IPV:

1. Never experienced IPV (no IPV)
2. Last experienced IPV 0-2 years before Survey 5 (0-2)
3. Last experienced IPV 3-5 years before Survey 5 (3-5)
4. Last experienced IPV 6-8 years before Survey 5 (6-8)
5. Last experienced IPV 9-11 years before Survey 5 (9-11)
6. Last experienced IPV 12 or more years before Survey 5 (12+)

Table 7-2 Socio-demographic and health characteristics of mid-aged women at Survey 5 (2007) by length of time since women last experienced intimate partner violence (IPV)

			Years since IPV			
	No IPV n=8,676 %	≥12 n=1,264 %	9-11 n=129 %	6-8 n=113 %	3-5 n=74 %	0-2 n=59 %
Urban	39.9	36.7	38.6	32.1	38.4	42.9
Marital status						
Married / de facto	76.2	48.4	34.2	38.4	29.9	67.7
Separated/divorced	15.9	44.1	57.3	51.9	54.3	28.9
Widowed/single	7.9	7.5	8.5	9.7	15.9	3.4
Educational qualifications in 1996						
<HSC	43.0	53.4	46.2	36.8	37.5	57.0
HSC	17.5	14.9	14.0	23.3	19.4	8.7
Post school qualifications	39.5	31.7	39.8	39.9	43.0	34.3
Manage on available income	69.8	47.3	47.5	42.5	48.7	44.6
Smoker	8.9	22.5	25.6	30.4	16.5	23.0
Menopause status						
Pre-menopause	0.4	0.3	0	0	0	4.2
Peri-menopause	3.1	2.0	5.0	2.4	0.6	0
Post-menopause	65.9	56.4	65.2	52.3	64.1	63.2
Surgical menopause	30.6	41.3	29.8	45.3	35.3	32.6

		Years since IPV				
	No IPV n=8,676 %	≥12 n=1,264 %	9-11 n=129 %	6-8 n=113 %	3-5 n=74 %	0-2 n=59 %
	Mean (standard deviation)					
Mental health	76.9 (16.8)	70.7 (19.8)	72.3 (18.1)	71.8 (19.7)	66.8 (21.8)	58.2 (23.3)
General health	72.7 (19.8)	64.7 (23.4)	65.2 (23.9)	61.8 (24.6)	64.9 (21.0)	64.3 (23.6)
Mean stress score	0.5 (0.4)	0.7 (0.5)	0.7 (0.5)	0.8 (0.5)	0.9 (0.5)	1.1 (0.7)

Note. Percentages adjusted for over-sampling in rural and remote areas

Table 7-2 shows the SF-36 MHI scores for these six groups of women as defined by their IPV status (above). Of all the groups who had experienced IPV, women who had most recently experienced IPV were the most likely to be married or living in a de facto relationship, to have less than 12 years of formal education and were experiencing the highest levels of stress. While general health was about the same for women who had lived with IPV regardless of when IPV was last experienced, there was a clear trend for mental health to be better the longer it had been since women had lived with IPV, from a mean SF-36 MHI score of 58 for women 0-2 years post IPV moving up to 71 for those 12 or more years post IPV, as measured at Survey 5 in 2007 (see also Figure 7-2).

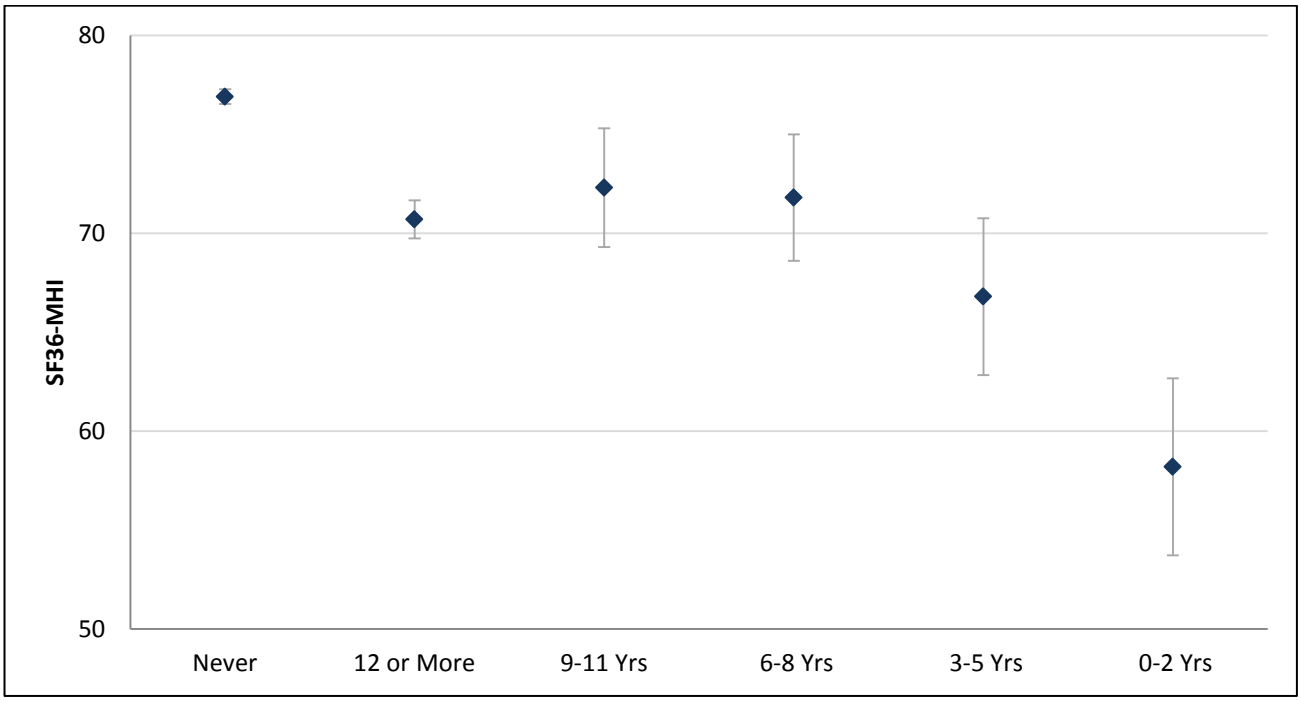

Figure 7-2 Mental health (SF-36 MHI) for the 1946-51 cohort at Survey 5 (2007) by years since intimate partner violence (IPV) was last experienced.

In order to examine changes in mental health over time, mental health index scores were plotted at each survey by the time since IPV was last experienced. Numbers of women who had experienced IPV 0-2 and 3-5 years in the past were small, so these groups were collapsed to form a single category: 0-5 years since IPV was last experienced. Results are reported in Figure 7-3.

As with the other results in this section, there was a clear distinction in mental health between those who have experienced IPV and those who have not. The striking finding in this analysis is that even after 12 or more years have passed since IPV, women who have lived with violent partners continue to have poorer mental health compared with those women who have never lived with violent partners. Women who most recently experienced IPV (0-5 years) had the worst mental health, with those who last experienced IPV in 1998 (9-11 years) and 2001 (6-8 years) showing comparatively better mental health.

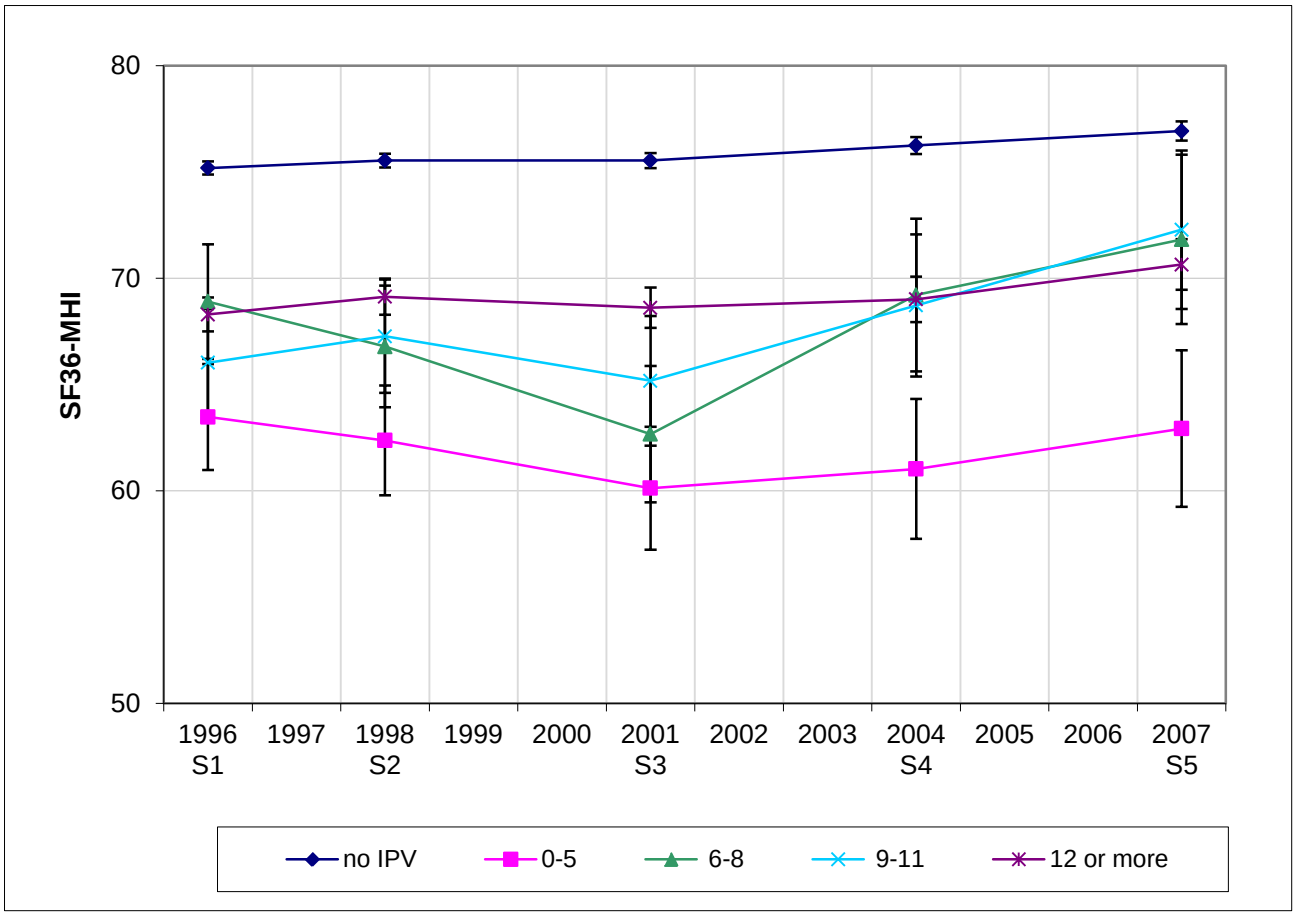

Figure 7-3 Mental health of women in the 1946-51 cohort at the time of each survey by IPV status at Survey 5 (2007).

7.2.4 Summary - Intimate partner violence and mental health

- Women in their 20s and 30s who report IPV experience a subsequent decrease in mental health.
- Women in their 20s and 30s who report IPV experience poorer mental health prior to IPV, suggesting an inter-connected relationship; that is, IPV affects mental health status and likewise mental health affects IPV.
- An analysis of data from women in the mid-aged cohort (born 1946-51) found that after the cessation of IPV, women experience an improvement in mental health. However, even after 12 years, their mental health is significantly poorer than that of women who have never lived with IPV.

7.2.5 Discussion - Intimate partner violence

The longitudinal nature of the ALSWH data permitted analyses of mental health in relation to the onset and cessation of IPV. Analysis of data from the cohort born 1973-78 revealed that women who experience IPV experience significantly poorer mental health than women who never experience IPV, both prior to and subsequent to the onset of IPV. Among women from the 1946-51 cohort, the cessation of IPV was associated with an improvement in mental health. Nevertheless, even 12 years after IPV ceased, women who had lived with IPV reported poorer mental health than women who had never had these experiences. While primary prevention must remain a core policy activity, the value of effective interventions that alleviate the psychological burden of IPV should not be underestimated.

7.3 Carers and mental health

7.3.1 Introduction

In 2009, 2.63 million Australians identified themselves as informal carers, with 29% being primary carers (ABS, 2009). Informal caring has both benefits and costs to carers. Benefits may include gratification, pride and resiliency (May & Lund, 1999). However, informal caring is also a significant burden on the people, largely women, who take it on. Evidence shows carers, particularly those with a high care load (providing >20 hours of care/week) or who are caring for co-resident spouses, sick or disabled children, or parents, have a higher risk of psychological distress (Hirst, 2005; Cummins, 2007) and poorer physical health (Edwards, 2008), than non-carers. Carers also tend to be disadvantaged financially (Access Economics, 2010; Hirst 2005, Cummins, 2007). Hirst (2002) estimates that two-thirds of women will provide 20 hours or more informal care per week at some time before they are 75 years of age.

To aid our understanding of caring by Australian women, questions about caring have been asked in every ALSWH survey for all age cohorts: the women are asked whether they *"regularly provide care or assistance (e.g., personal care, transport) to any other person because of their long-term*

illness, disability or frailty?" Information about caring intensity was also asked (Surveys 2-7 for 1946-1951 cohort, Survey 6 for 1973-1978 cohort). Intensity is captured by asking whether the women lived with the person they cared for; how many people they regularly provided care for; how often they provided care; and how much time they usually spent caring on each occasion.

Researchers working with ALSWH data have conducted several research projects on the employment, health service use, physical health and mental health outcomes of women who care. These projects have focussed on women born between 1946-51 and 1921-26 and were funded by sources including the National Health and Medical Research Council and the Australian Government Department of Health and Ageing (DoHA).

This section summarises the findings of these research projects, with particular focus on the mental and psychosocial health outcomes of ALSWH women carers.

7.3.2 Caring by women born between 1946-51

Between 2006 and 2010 the ALSWH team were commissioned by DoHA to provide detailed analyses of caring by the mid-age women (born 1946-51) who provide care for someone who is frail or disabled. The ALSWH data used for this research came from Surveys 3 and 4 of the 1946-51 cohort and a special survey on caring completed in 2007 by the pilot group for the 1946-51 cohort. The analyses conducted on these data focussed on:

a) The mental and physical health of carers, with particular reference to how these are affected when carers juggle caring and employment.
b) The influence of factors such as where carers lived (both in relation to the care recipient and in terms of area of residence) and the frequency and amount of care that the carers provide, on the carer's physical and mental health.

a) The mental and physical health of carers, with particular reference to how these are affected when carers juggle caring and employment

In Surveys 3 and 4, 25% and 29% of women respectively reported caring for someone who lived with them or lived elsewhere. The women who provided care were almost three times more likely to care for someone living elsewhere than for someone living with them. More than half of the women providing care at Survey 3 or Survey 4 did not do so at both surveys, suggesting that caring roles are transient. For more than half of the women who provided care, the intensity of caring remained stable. Where the level of care changed it was more likely to increase (Berecki et al., 2007).

Live-in carers in particular were found to experience poorer mental health, with lower levels of optimism and higher stress than non-carers (see Table 7-3). Regardless of whether the women cared for someone they lived with, cared for someone living elsewhere or did not care, those who were employed had better mental health, higher optimism and lower stress than those who were not in the labour force.

Table 7-3 Table of means and confidence intervals of mental health, optimism and stress scores for caring and employment groups in the 1946-51 cohort at Survey 4

Group	N	Mean mental health summary score (95% CI)[a]	Mean optimism score (95% CI)[b]	Mean stress score (95% CI)[c]
Care group				
Live with	816	45.0 (44.0-45.9)	14.8 (14.5-15.1)	0.76 (0.73-0.80)
Live elsewhere	2155	48.5 (48.0-49.0)	16.0 (15.8-16.1)	0.63 (0.61-0.64)
Non carer	7427	49.2 (49.0-49.5)	15.8 (15.7-15.9)	0.55 (0.54-0.56)
Employment group				
Not in labour force	2901	47.2 (46.7-47.6)	14.8 (14.7-15.0)	0.58 (0.56-0.60)
1-34 hours (part time)	3811	49.5 (49.1-49.9)	16.0 (15.9-16.1)	0.56 (0.55-0.58)
35+ hours (full time)	3650	49.3 (48.9-49.6)	16.2 (16.1-16.4)	0.60 (0.59-0.62)
CARE GROUP: Live with Employment				
Not in labour force	354	43.9 (42.5-45.4)	14.0 (13.5-14.4)	0.74 (0.59-0.79)
1-34 hours (part time)	255	45.5 (43.8-47.2)	15.2 (14.6-15.7)	0.77 (0.70-0.83)
35+ hours (full time)	200	46.0 (44.2-47.9)	15.8 (15.2-16.5)	0.79 (0.72-0.87)
Care group: Live elsewhere Employment				
Not in labour force	552	47.0 (45.9-48.1)	15.3 (14.9-15.6)	0.62 (0.58-0.66)
1-34 hours (part time)	927	49.4 (48.6-50.1)	16.2 (15.9-16.4)	0.60 (0.57-0.63)
35+ hours (full time)	667	48.6 (47.7-49.5)	16.4 (16.0-16.7)	0.67 (0.63-0.70)
Care group: Non carer Employment				
Not in labour force	1987	47.8 (47.2-48.3)	14.9 (14.7-15.0)	0.54 (0.52-0.56)
1-34 hours (part time)	2623	49.9 (49.5-50.4)	16.0 (15.9-16.2)	0.53 (0.51-0.54)
35+ hours (full time)	2773	49.7 (49.2-50.1)	16.2 (16.1-16.4)	0.57 (0.55-0.59)

[a] higher score = better mental health; [b] higher score = more optimism; [c] higher score = higher stress levels

b) The influence of factors such as where carers live and the frequency and amount of care that the carers provide on the carer's mental health

This study used data collected from a sub-study of the women who are in the pilot group for the 1946-51 cohort (each cohort has a similarly aged pilot study group of women, not included in the main sample, who pilot test the main ALSWH survey). The pilot group for the 1946-51 cohort includes 355 women. Of these, 296 women (97 carers, 199 non carers) participated in a sub-study in 2007 (McKenzie et al., 2009).

The study found that while carers were similar to non-carers on most demographic characteristics (age, relationship status, residence, language spoken at home and level of education), they were less likely to be in the workforce than non-carers. Carers also had poorer mental health and

reported receiving less social support than non-carers. Further, women who were live-in carers and therefore more likely to be providing more intensive caring, were more likely to report higher strain and that 'their lives were worse' due to caring compared with carers who cared for someone living elsewhere.

7.3.3 Caring by women born between 1921-26

Two research projects examining caring by older women have been conducted.

a) Between 2003 and 2005, in a study funded by the National Health and Medical Research Council, the ALSWH team surveyed ALSWH participants caring for people with neurodegenerative disorders. The focus of the study was on their experience with health services and the impact of caring on their health.
b) Between 2008 and 2010 the ALSWH team were commissioned by DoHA to provide detailed analyses of caring by women born between 1921-26 who provided care for someone who was frail or disabled. The research examined how the older women transition into and out of caring across time and the impact of these transitions on the women's mental and physical health and health service use.

a) Study of women caring for people with neurodegenerative disorders and their experience with health services

The data used for this study was from a nested cross-sectional sub-study of the ALSWH, involving data from 280 carers who cared for someone who may have used community services (Tooth et al., 2008). The study measured the amount of strain or burden the carers reported feeling, social support, and mental and physical health.

The carers who completed the survey provided the majority of the help for the care recipients compared to other unpaid carers or paid services. In general, carers perceived their 'lives to be worse' due to caring, with carers providing the most intensive caring perceiving this most acutely. Carer strain was related to caring intensity: carers providing more intensive care (that is, daily care or care several times per week) were more likely to be strained or burdened than were carers providing less intensive care. Carers were satisfied with their social support networks and the level of support they received and their perceptions of this did not differ by the intensity of the care they provided. The 280 women carers had poorer mental and physical health compared with the entire 1921-26 cohort of the ALSWH. The carer's mental and physical health did not differ by the intensity of the care they provided.

b) Research on transitions into and out of caring across time and the impact of these transitions on carer's mental and physical health and health service use

Data from Surveys 2- 5 of the 1921-26 cohort of the ALSWH were examined. Of the women who responded to the four surveys, 60% did not provide care at any survey. The remaining women included those who provided care at all four surveys (2%) and women who provided care at some

point across the four surveys (38%). Therefore, of the women who provided care at some point during the surveys, the majority (95%) transitioned into or out of their caring roles.
Women who transitioned into and out of live-in caring had poorer mental health than women who never provided care. Of note, in this cohort, women who cared for someone living elsewhere had better mental health than those women who never provided care.

7.3.4 Summary - Carers and mental health

1946-51 cohort:

- Carers experienced poorer mental health, particularly women who lived=-in as carers. This latter group reported providing more intensive care and were more likely to report 'their lives were worse' than those not providing live-in care.
- Carers who were employed in addition to providing care had better mental health than those who provided care and were not in the work force.
- Carers experienced lower levels of social support compared with non-carers.

1921-26 cohort:

- Carers experienced poorer mental and physical health regardless of intensity of care; however those who cared for someone living elsewhere had better mental health.
- Carers experienced satisfactory levels of social support regardless of intensity of care.
- Most carers transitioned in and out of their caring roles. Carers who transitioned in and out of living with the person they cared for had poorer mental health than women who were never carers.

7.3.5 Discussion - Carers and mental health

The ALSWH prevalence data on caring by mid- and older-aged Australian women are similar to data collected by the Australian Bureau of Statistics. While women may willingly enter into a caring relationship, their lives are still impacted by their caring role: overall women carers have poorer mental and psychosocial health and less social support than non-carers. These outcomes are worse for women providing intensive and live-in care. For mid-aged women, carers who are employed have better mental health compared with those who are not in the labour force. This reinforces the need for flexible working arrangements which would enhance the ability of family caregivers to continue to participate in the workforce, for example, greater availability of part-time work arrangements and job sharing. For older women, caring for someone living elsewhere can have a positive impact on mental health compared with not caring.

7.4 Social support and mental health

7.4.1 Introduction

The Australian government has recognised the importance of social connectedness through its Social Inclusion Policy (Australian Government, 2010). Research has shown that there are gender differences in the relationship between social support and mental health (Pettit et al., 2011; Kawachi & Berkman, 2001); therefore a better understanding of the association between poor mental health and social support in two cohorts of Australian women of different ages can provide valuable information to support Australia's Social Inclusion Policy implementation (Australian Government, 2010).

To better understand the relationship between women's mental health and social support, this study considered the influence of social support on current and future mental health, and the influence of previous mental health on current levels of social support. It also considered what characteristics, such as BMI, were associated with both poor social support and poor mental health. It explored whether social support changed over time and what characteristics were associated with lower levels of social support at a later survey. Social support was measured using the six-item short form of the Medical Outcomes Study Social Support Scale (MOS-SSS6). Questions related to support available for a range of circumstances such as needing help if confined to bed, someone to talk to about problems and being taken to the doctor. Issues of community resources, access to internet and social media were not considered. The MOS-SSS6 total score was grouped into tertiles of low, moderate and high social support (See Appendix B.6 for details).

7.4.2 Influence of social support on mental health and reverse

Table 7-4 shows the odds (probability) of having poor mental health at three points in time (current, next and previous) for each level of social support amongst women born 1973-78 and women born 1946-51. This section considers the impact of social support on current and future mental health. It also considers the association between social support and previous psychological distress to understand whether the relationship between psychological distress and social support is inter-connected - that is, whether previous poor mental health influences social support and the reverse.

Table 7-4 Analysis of the inter-connected association between mental health status and social support. More arrows signify a stronger relationship

	1973-78 cohort			**1946-51 cohort**		
	Current psychological distress	**Next** psychological distress	**Previous** psychological distress	**Current** psychological distress	**Next** psychological distress	**Previous** psychological distress
Unadjusted						
High social support	reference	reference	reference	reference	reference	reference
Moderate social support	↑↑	↑	↑	↑↑	↑	↑
Low social support	↑↑↑↑	↑↑	↑↑	↑↑↑	↑↑	↑↑
Adjusted*						
High social support	reference	reference	reference	reference	reference	reference
Moderate social support	↑↑	↑	↑	↑↑	↑↑	↑
Low social support	↑↑↑↑	↑↑	↑↑	↑↑↑↑	↑↑↑	↑↑
Adjusted* + current MH						
High social support		reference	reference		reference	reference
Moderate social support		↑	↑		↑	↑
Low social support		↑↑	↑↑		↑↑	↑↑

* Adjusted for characteristics significant in models described in Chapter 5 as follows: area of residence (younger cohort only), country of birth (mid cohort only), non-English speaking background (younger cohort only), work/study (younger cohort only), hours worked (mid cohort only), manages on income, relationship status, BMI, smoking status, alcohol use, and exercise.

Arrows indicate strength of association (probability ratios) significant at p<0.05:
↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2
No arrow indicates there is no evidence of a relationship.

Lower levels of social support were most strongly associated with current psychological distress. However, they were also associated with psychological distress at the next survey, even after adjusting for current psychological distress. In addition, lower levels of social support were associated with previous mental health. Or to explain this another way, previous psychological distress to some extent influences current levels of social support, even after adjusting for psychological distress at the time social support is measured. All these associations continue to be significant after adjusting for other characteristics that were found to be significantly associated with psychological distress, as listed at the bottom of the table (Table 7-4).

7.4.3 Characteristics associated with psychological distress and social support

Table 7-5 shows the characteristics that were associated with psychological distress and/or social support in mid-aged and younger women. Only those characteristics described in Chapter 5 as being significantly associated with mental health were considered (these are listed in Table 7-5). Most of the characteristics associated with psychological distress were also associated with social support, as shown in Table 7-4, with the exception of smoking and education level.

Table 7-5 Characteristics associated[#] with either psychological distress (SF36-MHI) or social support (MOS-SSS6), after adjusting for characteristics listed

Characteristic	1973-78 cohort		1946-51 cohort	
	Psychological distress*	Social support**	Psychological distress*	Social support**
Area of residence	✓	✓	no	n/a
Education level	✓	no	✓	no
Country of birth/ language at home	✓	✓	✓	✓
Work/ study	✓	✓	✓	✓
Manages on income	✓	✓	✓	✓
Relationship status	✓	✓	✓	✓
Body Mass Index (BMI)	✓	✓	✓	✓
Smoking	✓	no	✓	no
Exercise	✓	✓	✓	✓
Alcohol use	✓	✓	✓	✓

significance p<0.05; *See Tables in Section 5.2 for details of characteristics associated with psychological distress; ** Some or all categories of the characteristic are associated with either higher or lower levels of social support after adjusting for other characteristics where appropriate (analyses for social support also adjusted for current psychological distress).

7.4.4 Changes in social support over time

Figure 7-5 and Figure 7-5show the changes in social support status over time experienced by young and mid-aged women. Only women with data available at all surveys are included in these figures. Data for social support are not reported for the older age cohort and are not available at Survey 1 for the mid-aged and younger cohorts.

Figure 7-4 shows that many young women experience changes in levels of social support over time. For example, at Survey 2 women are grouped into low (green), moderate (mauve) and high (purple) social support. (Appendix C provides instructions on how to interpret this style of graph using Figure 3-8 as an example). Approximately one third of the women with low social support at Survey 2 have changed to either moderate or high support in Survey 3. By Survey 5 less than one third of those with low social support at Survey 2 continued to have low social support at all subsequent surveys.

Figure 7-4 1973-78 cohort: Patterns of social support over time.

Table 7-6 reports on the statistical analysis of the data presented in Figure 7-4. It considers the probability of having low social support (compared with moderate support) if young women had low social support at the previous survey (3 years earlier); and the odds of having low social support (compared with moderate support) if they had low social support at the survey two prior (6 years earlier). These analyses found that young women with low level support had 2.77 greater probability of having the same low level of social support at the previous survey; and 2.08 greater probability of having the same low support two surveys prior (6 years earlier). Conversely, young women with low support had a considerably lower probability of having high support at the previous survey, three years prior (OR: 0.63, 95%CI: 0.54-0.73) and somewhat lower probability of having high support six years prior (OR: 0.78, 95%CI: 0.68-0.90) (Table 7-6). Therefore it can be seen that if women's social support level does change, it is most likely to change by one level not two, for example, from high to moderate rather than from high to low.

Table 7-6 Odds that women experience the same level of social support 3 and 6 years previous. More arrows signify a stronger relationship.

	1973-78 cohort		**1946-51 cohort**	
	Current level of social support (Reference = moderate support)		**Current level of social support** (Reference = moderate support)	
	Low support	High support	Low support	High support
Low support 3 years previous	↑↑↑	↓	↑↑↑↑	↓
High support 3 years previous	↓↓	↑↑↑	↓↓	↑↑↑↑
Low support 6 years previous	↑↑		↑↑↑	↓
High support 6 years previous	↓	↑↑	↓	↑↑↑

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5<6.5) ↑↑↑↑↑↑ (6.5<9.5) ↑↑↑↑↑↑↑ (9.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

The analyses also considered the probability of young women having high social support (compared with moderate support) if they had high social support at the previous survey (3 years earlier); and the probability of young women having high social support (compared with moderate support) if they had high social support at the survey two prior (6 years earlier). They showed that young women with high level support had 2.97 greater chance of also having high support at the survey three years prior and 1.88 greater probability of also having high support at the survey six years prior (Table 7-6). Conversely, young women with high support had a decreased chance of having low support at the previous survey, three years prior (OR: 0.82, 95%CI: 0.71-0.95); but there were no differences in whether someone would have high and moderate current support if they had low support six years prior (Table 7-6).

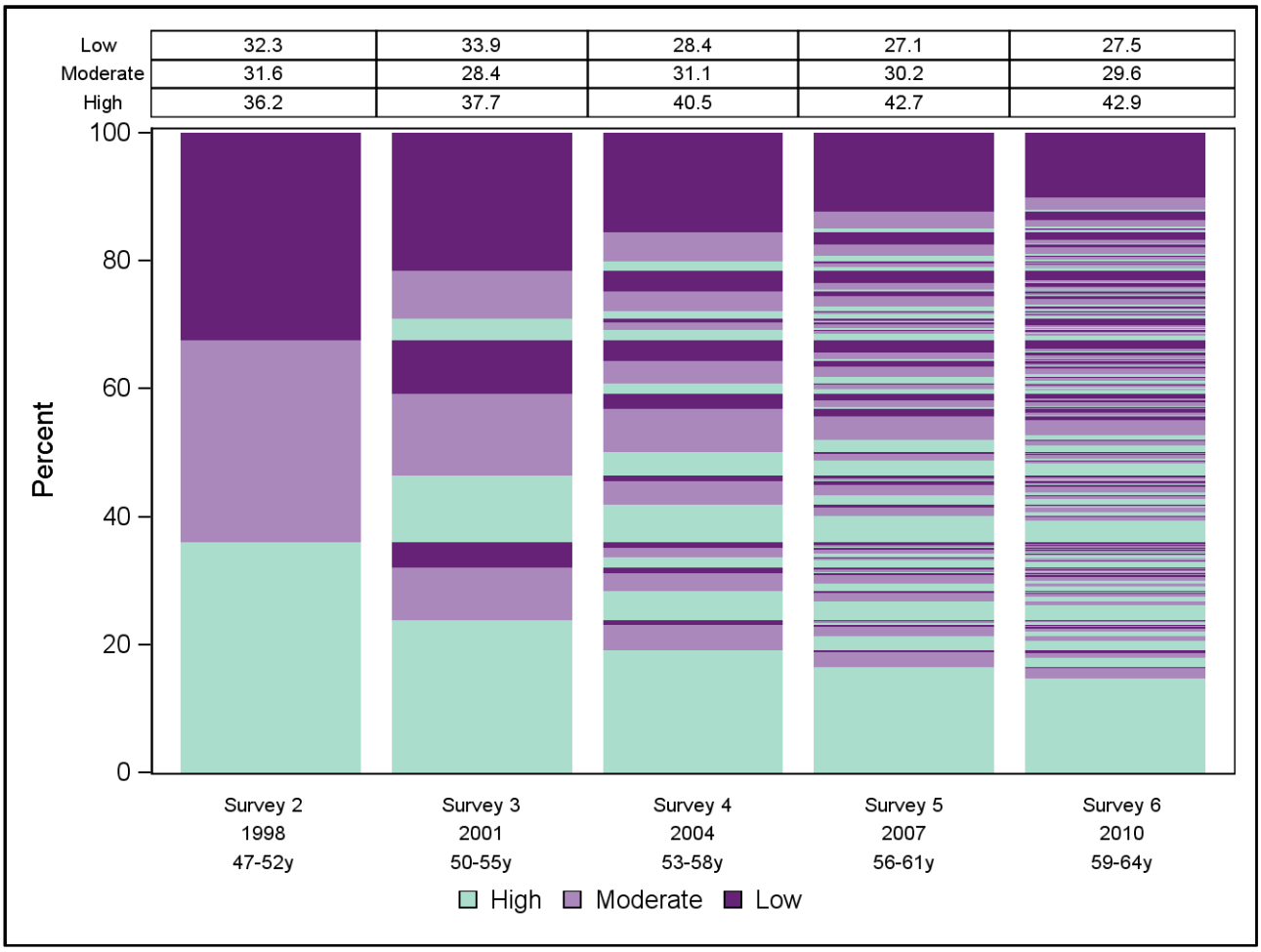

Figure 7-5 1946-51 cohort: patterns of social support over time.

Figure 7-5 shows some women in the 1946-51 cohort experience a similar pattern of change in levels of social support over time. For example, at Survey 2, women are grouped into low (green), moderate (mauve) and high (purple) social support. (Appendix C provides instructions on how to interpret this style of graph using Figure 3-8 as an example). Approximately one third of the women with low social support at Survey 2 have changed to either moderate or high support in Survey 3. By Survey 5 approximately one third of those with low social support at Survey 2 continued to have low social support at all subsequent surveys.

Table 7-6 also reports statistical analyses relevant to Figure 7-5. Those mid-aged women (born 1946-51) with current low social support had 3.78 greater probability of having low support at the previous survey, three years prior (compared with moderate support); and 2.74 greater probability of having current low social support if they had low social support two surveys prior (6 years earlier). Conversely, mid-aged women with current low support had a lower probability (OR: 0.59, 95%CI: 0.52-0.67) of having high support at the previous survey (3 years earlier), and a decreased probability of having current low support if they had high support two surveys prior (6 years earlier).

Mid-aged women with current high level social support had a 3.59 greater probability of having high level support at the previous survey 3 years earlier; and 2.82 greater probability of having high support two surveys prior (6 years earlier). Conversely, women who had current high levels of support had a decreased chance of having low social support at the previous survey three years earlier (OR: 0.70, 95% CI: 0.63-0.79), and less chance of having low support six years prior (0.78, 95%CI: 0.71-0.87). Therefore when mid-aged women's level of social support does change it is more likely to change by one level not two, for example, from high to moderate support rather than from high to low support. This was more noticeable in mid-life than for younger women. Therefore, the probability of maintaining the same level of social support was generally greater among mid-aged women than younger women.

7.4.5 Characteristics associated with later social support

After adjusting for other statistically significant factors, low levels of social support at later surveys was found to be statistically significantly associated with the following characteristics in younger women (born 1973-78): living in a remote or outer regional area (compared with metropolitan), being overweight (compared with healthy weight), being a non-drinker or infrequent drinker (compared with low risk drinker), no exercise or low levels of exercise (compared with high-level exercise). Women who had difficulty managing on their income had a greater probability of being in the moderate or low levels of social support compared with the reference category of high social support, and a higher probability of being in the low social support category than in the moderate support category. Similarly, several categories of work and study were associated with greater odds of being in the moderate or low levels of social support compared the high social support. Specifically, women involved in study only (in other words, not working as well) had the greatest probability of being in the low social support category. However, all categories of work and study had an increased probability of not being in the high social support category compared with women who were in full-time work only, with the exception of those in full-time work and study. Conversely, factors associated with a lower probability of experiencing low social support at the following survey included being university educated (compared with school only), and being in married or de facto relationships (compared with being never married) (see Table 7-7).

Table 7-7 Characteristics associated with levels of social support at later surveys, adjusting for other characteristics as appropriate.

	1973-78 cohort[#] Subsequent social support (reference=high social support)		**1946-51 cohort[¤] Subsequent social support** (reference=high social support)	
	Moderate support	Low support	Moderate support	Low support
Area of residence				
Major city	reference	reference	Not included	Not included
Inner regional			-	-
Outer regional		↑	-	-
Remote		↑↑	-	-
Education				

	1973-78 cohort[#] Subsequent social support (reference=high social support)		1946-51 cohort[¤] Subsequent social support (reference=high social support)	
	Moderate support	Low support	Moderate support	Low support
School only	reference	reference	Not included	Not included
TAFE/College			-	-
University		↓	-	-
Country of Birth				
Australia	reference	reference	reference	reference
Other English-speaking				
Non-English-speaking			↑	↑
Work/study				
FT work only	reference	reference	Not available	Not available
FT work and study		↑	-	-
PT work only	↑	↑	-	-
PT work and study	↑	↑	-	-
Study only	↑	↑↑	-	-
Neither	↑	↑	-	-
Hours Worked				
Full time	Not used	Not used	reference	reference
Part time				
Not in work force			↓	
Manages on Income				
No difficulty	reference	reference	reference	reference
Difficult sometimes	↑	↑↑	↑	↑↑
Impossible/difficult	↑	↑↑	↑	↑↑
Relationship Status:				
Never married	reference	reference	reference	reference
De facto		↓	↓↓	↓↓↓↓
Married		↓	↓↓	↓↓↓↓↓
Widowed/ Sep/ Divorced				
Body Mass Index (BMI)				
Healthy weight	reference	reference	reference	reference
Underweight				
Overweight				
Obese		↑		↑
Smoking status				
Never smoked	reference	reference	reference	reference
Ex-smoker	↑			
Current smoker				↑
Alcohol use				
Low risk drinker	reference	reference	reference	reference
Non-drinker		↑		↑

	1973-78 cohort[#] Subsequent social support (reference=high social support)		1946-51 cohort[¤] Subsequent social support (reference=high social support)	
	Moderate support	Low support	Moderate support	Low support
Rarely drinks		↑		↑
Risky/very risky drinker				
Exercise				
High	reference	reference	reference	reference
Moderate				
Low		↑	↑	↑
None		↑		↑

Note: #adjusted for area of residence, non-English language spoken at home, education, managing on income, relationship status, BMI, smoking status, exercise, alcohol use, work/study, and survey.

¤ adjusting for education, country of birth, managing on income, relationship status, BMI, smoking status, exercise, alcohol use, hours of work, and survey.

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship. ↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

7.4.6 Patterns of social support over time and their associations with poor mental health outcomes

Researchers grouped 'low' moderate' or 'high' responses at each survey for each woman to identify patterns of social support over time for each woman. These patterns were then grouped into categories according to logical groups, such as continually high social support. Then the impact on mental health experienced by each group was considered. Table 7-8 shows that women who consistently had poor social support over time had the greatest probability of having poor mental health when compared with the group who had good social support at most or all surveys (reference group).

Table 7-8 Patterns of social support over time associated with psychological distress, using all surveys, 1973-78 cohort.

	Unadjusted	Adjusted [#]
Pattern of social support over time	Reference=Good social support	Reference=Good social support
Good to moderate social support	↑	↑↑
Moderate social support	↑↑	↑↑
Moderate to poor social support	↑↑↑	↑↑↑
Poor social support	↑↑↑↑↑	↑↑↑↑↑

Note: # adjusted for the effect of other factors: area of residence, education, managing on income, relationship status, BMI, smoking status, exercise, alcohol use, work/study, and survey.

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

The association between grouped patterns of social support over time and the mental health outcomes reported above demonstrates a pattern of increased chance of poor mental health with decreased social support. Furthermore, as the level of social support decreased the chance of poor mental health increased.

7.4.7 Summary - Social support and mental health

- The relationship between social support and mental health is inter-connected, that is, poor social support can lead to poor mental health and poor mental health can lead to poor social support.
- Many of the characteristics associated with poor mental health are also associated with poor social support.
- Levels of social support change over time for many women and only remain consistent for about 25% of women.
- There is a pattern of association between social support and mental health whereby as the level of social support decreases the chances of poor mental health increases. Those with poor social support had the highest probability of having poor mental health.
- Characteristics most strongly associated poor social support at later surveys were: not being in an intimate relationship, difficulty managing on income and, in young women, work and study.

7.4.8 Discussion - Social support and mental health

This study found a strong association between poor social support and poor mental health which is consistent with other studies (Rosenquist, 2011; van Lente et al., 2012). It also found that as the level of social support decreased the odds of having poor mental health increased. Using the longitudinal data available through ALSWH, this study found that lower levels of social support were associated with later poor mental health, and poor mental health was associated with poor social support at later surveys. Few studies have longitudinal data to look at pathways of developing poor mental health or poor social support. There is however, strong evidence of an association between poor social support and poor mental health when data on both factors are measured at the same time (Rosenquist, 2011; van Lente et al., 2012).

The relationship between mental health and social support is complex and not easily explained. It has been reported to mediate the relationship between socio-economic status and mental health (Vonneilich et al., 2012), to mediate the effect of enculturation on subjective well-being (Yoon et al., 2012), and to mediate the relationship between mental health and all-cause mortality (Xu & Roberts, 2010). This ALSWH study also found that many of the factors associated with poor mental health are also associated with social support. These were: the health behaviours of BMI, smoking, exercise and alcohol use; and socio-demographic factors of low education, not being in an intimate relationship, being of non-English speaking background, difficulty managing on income and work/study activities. A recent study from the Netherlands found that negative

experiences of social support were not only associated with poor mental health but also with current smoking, physical inactivity, being overweight and alcohol consumption (Croezen, 2012). Using ALSWH longitudinal data, the current study was able to identify that many of these factors also negatively impacted on later levels of social support, and that these patterns of association differed between cohorts, indicating that age and life stages influence these relationships.

To make best use of the ALSWH longitudinal data and better understand the complex nature of the relationship between social support and mental health, individual women's patterns of social support over time were considered and grouped into categories; for example, those who had good social support at all surveys and those who fluctuated between good and moderate support. Mental health outcomes for each of these categories of women were then considered; those experiencing consistently poor social support also experienced the worst mental health and those with consistently good social support experienced the best mental health outcomes.

While it can be shown that poor social support is likely to result in poor mental health and poor mental health can result in poor social support, caution is needed in interpreting these findings. More research is needed to better understand the complex relationship between these factors and other characteristics such as health behaviours and socio-demographic factors. For example, a study by Kawachi & Berkman (2001) reported that social connections may paradoxically increase levels of mental illness symptoms in women with low resources, as social connections often come with their own responsibilities and demands on time and resources.

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8 Life stages and mental health

8.1 Introduction

The Fourth National Mental Health Plan (2009-2014) recognises the need to address mental health issues as they relate to the population across the lifespan (Commonwealth Government of Australia, 2009). This section describes the mental health of women in relation to several life events common to women at various stages across the lifespan.

8.2 Timing of motherhood and mental health

The transition into motherhood is associated with multiple stressors including increased financial pressure, physical exhaustion, task overload, and role restriction (Birkland et al., 2005). Maternal age is an important risk factor for both obstetric and perinatal adverse outcomes. Adverse outcomes are more likely to occur amongst younger and older mothers (AIHW, 2010). The average age of first-time Australian mothers has increased 7.5% since 1991. The proportion of older mothers (>35 years) has continued to increase from 17.5% in 2001 to 23% in 2010. Yet the proportion of teenage mothers (<20 years) has remained fairly steady, ranging from 5% in 2001 to 4% in 2010 (AIHW, 2010).

Data from the ALSWH 1973-78 cohort were used to consider the mental health status over time for different groups of women based on when they became mothers. A sample of 5,564 women was used because they had completed all Surveys 1-5 and answered questions related to motherhood and the SF-36 Mental Health Index (SF-36 MHI). Women were categorised according to the survey in which they first reported having children.

The prevalence of psychological distress reduced over time amongst all motherhood groups (see Figure 8-1). Women who already had children at Survey 1, when they were aged 18 to 23 years, had poorer mental health at Survey 1, and their mental health remained poor throughout the study period compared with other motherhood groups. However, there was less difference between groups at Survey 5. Women who did not have children at all during the study period also had poorer mental health over time compared with the women who had their first child between Surveys 2-5, covering ages 22 to 36 years. However, in later surveys there was less difference between these groups.

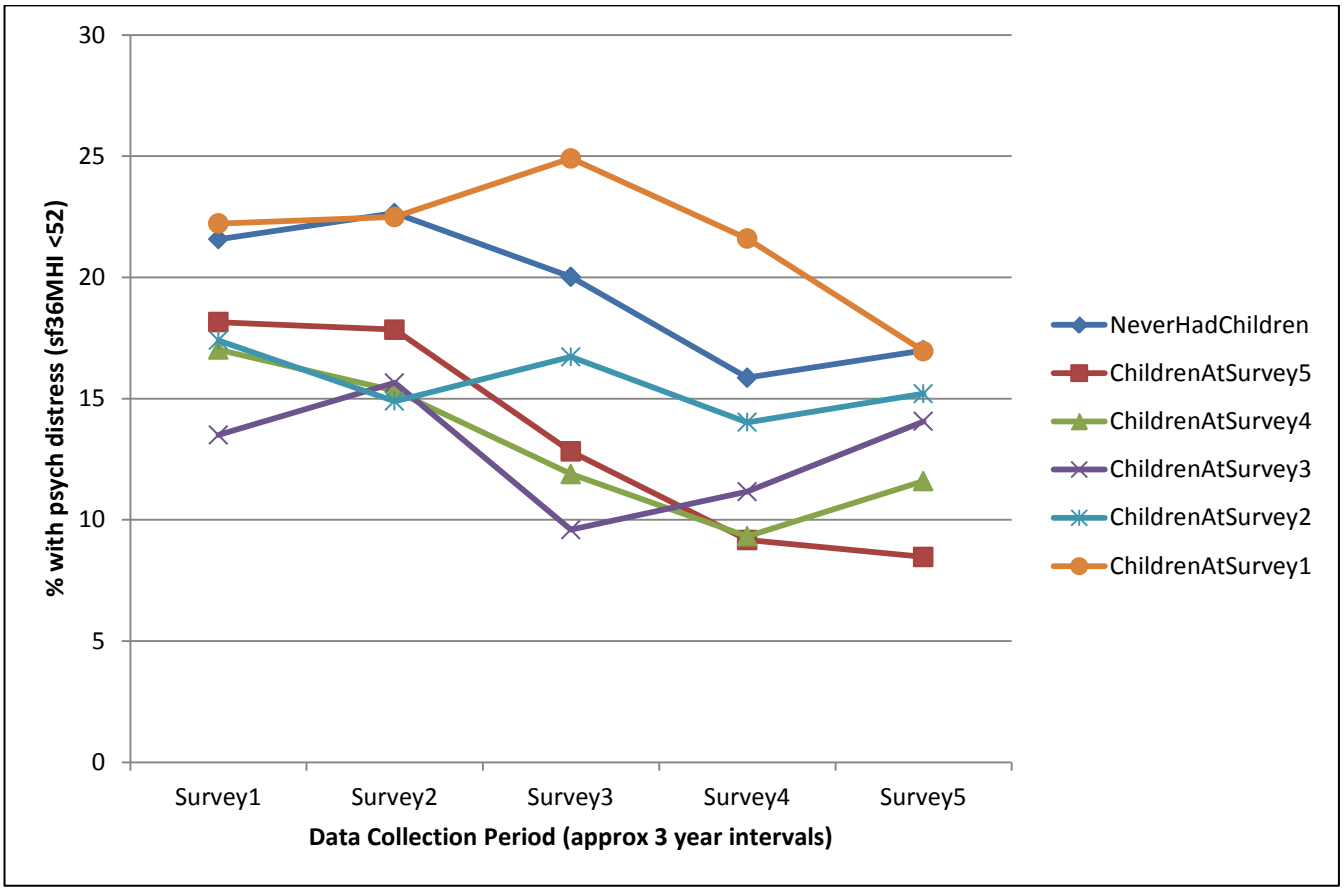

Figure 8-1 The proportion of women born 1973-78 who meet the criterion for psychological distress at each survey, grouped according to which survey they became mothers.

Figure 8-1 also shows that for each motherhood group who reported having a first child at Surveys 2-5, the proportion who met the criterion for psychological distress increased at the survey after their first child was born, but declined by the following survey.

Statistical analyses compared the differences between these mental health patterns across time, adjusted for the influence of area of residence, age, education, previous depression and general health (SF-36 general health subscale). The analysis showed that those women who already had children by Survey 1 were not significantly different at any survey from the reference group (who never had children during the study period). However, compared with the reference group,

women who had their first child at Surveys 2-5 had significantly lower odds of psychological distress at some but not all surveys. Table 8-1 summarises these patterns of difference.

Table 8-1 Patterns of mental health over time of each motherhood group compared to the reference group (never had children during the study period).

	Unadjusted	Adjusted[#]
Never had children during study period	Reference	Reference
Had first child by Survey 5	🡻	🡻
Had first child by Survey 4	🡻🡻	🡻
Had first child by Survey 3	🡻🡻	🡻🡻
Had first child by Survey 2	🡻	🡻
Had first child by Survey 1		

Note: # adjusted for baseline characteristics: area of residence, education, age, general health, previous diagnosis of depression

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.🡹 (1.0<1.5) 🡹🡹 (1.5<2.5) 🡹🡹🡹 (2.5<3.5) 🡹🡹🡹🡹 (3.5<4.5) 🡹🡹🡹🡹🡹 (4.5+);
🡻 (<1.0-0.65) 🡻🡻 (<0.65-0.4) 🡻🡻🡻 (<0.4-0.3) 🡻🡻🡻🡻 (<0.3-0.2) 🡻🡻🡻🡻🡻 <0.2

8.2.1 Summary for timing of motherhood

- Women experiencing first-time motherhood within the age range 22 to 36 years had better mental health outcomes over time than women who never had children or who had their first child prior to this.
- Mental health deteriorated at the survey immediately after the birth of the first child, then improved by the following survey.
- Women who had their first child at an early age experienced ongoing poor mental health.
- Childlessness or delaying the decision to have a child could also be associated with poor mental health.

8.2.2 Discussion - motherhood trajectories

This study found an improvement in mental health status with age, regardless of the timing of motherhood, a pattern which is discussed in detail in Chapter 3. It also found that mental health deteriorated temporarily at the survey immediately after reporting first motherhood. This was the case regardless of the timing of motherhood, and may be related to postnatal depression which is discussed in detail in Chapter 6, or may simply reflect the stresses of new motherhood.

This study found that women who were already mothers by Survey 1, had poorer mental health throughout early adulthood compared with women who became mothers later. An earlier ALSWH study may shed some light on this finding. This earlier study reports that women who became mothers early, already had greater socio-economic disadvantage and unhealthy lifestyles before giving birth (Lee, 2006). However, it is also the case that early motherhood increases the chances of poor outcomes (Jaffee et al., 2002). These complex and inter-connected relationships between early motherhood and social disadvantage are particularly concerning when we consider the findings of Moffitt et al. (2002), who report that the children of young mothers also have more emotional and behavioural problems and higher rates of illness and injury. Another earlier ALSWH

study found that poor mental health predicted subsequent pregnancy risk-taking (Miller-Lewis, 2006).

This ALSWH study also found that women who had not become mothers by Survey 5 (aged 31-36), had poorer mental health throughout early adulthood than other women who become mothers between ages 22-36 years. This suggests an association between poor mental health and childlessness or delayed motherhood. A recent ALSWH study on infertility supports this, suggesting that women who have poor mental health may be unlikely to seek help if they have difficulties becoming pregnant (Herbert et al., 2010). While we cannot be sure what proportion of the ALSWH women were intentionally childless at Survey 5, an earlier ALSWH study of this cohort of women found that only 9% of the cohort indicated a preference for being childless (Lee, 2006). This is particularly concerning in the light of evidence from the Netherlands that women who are involuntarily childless are likely to experience long-lasting poor mental health outcomes (Lechner et al., 2007).

8.3 Menopause and mental health

Mid-life is often a time of biological, psychological and social change for women, such as the menopausal transition, children leaving home, the birth of grandchildren, marital tensions and declining health or death of parents. Using latent class analysis, women in the 1946-51 cohort were grouped according to their experience of poor mental health (MHI < 52) over the six surveys. Women were found to form four distinct groups or patterns based on their mental health score through midlife (from age 45 to 64 years; see Figure 8-1).

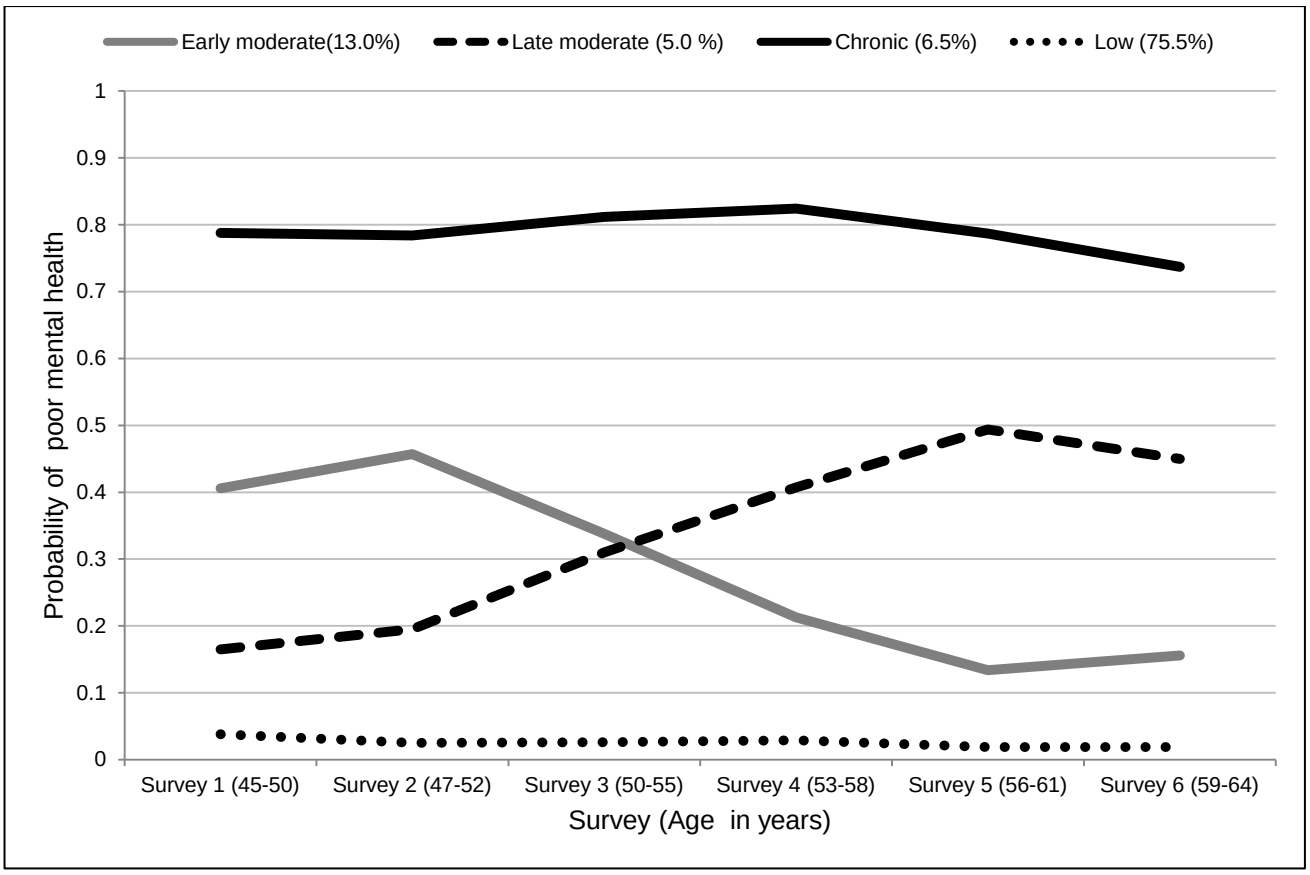

Figure 8-2 1946-51 cohort: Profiles of poor mental health (MHI < 52) from Survey 1 to Survey 6.

For most women, their probability of reporting poor mental health was unchanged (low profile). Specifically, as shown in Figure 8-2 , three out of four women (75%) were highly unlikely to report poor mental health over the six surveys, whereas 7% were classified as having a chronic profile with a high probability of reporting poor mental health across midlife. The remaining two profiles showed either diminishing probability until age 56-61 years (early moderate profile; 13%) or an increasing probability of reporting of poor mental health (late moderate profile; 5%) until a peak at age 56-61 years.

- Few women experience poor mental health during the menopausal life stage. Of those who do, most had only a moderate probability in either the early or late phases, whereas those experiencing a high probability of poor mental health had an ongoing high probability even prior to the menopausal life stage.

8.4 Widowhood and mental health

The death of a spouse is regarded as one of the most distressing life course experiences (Bonnano et al., 2008) and it becomes increasingly common with advancing age. Spousal loss may be somewhat expected in old age and older adults may be better equipped than younger adults to make sense of and manage their loss. Older women in particular, may anticipate and prepare for the loss of their spouse as they observe their peers experiencing spousal loss (Carr, 2008). While late life spousal bereavement is the most common form of spousal loss, very few studies involve the use of prospective data in community based samples (Bisconti et al., 2004). Following mental health and grief trajectories before and after bereavement helps to contextualise grief reactions. This helps to determine whether the poor mental health associated with spousal illness and loss is a continuation of pre-loss functioning or a time limited response to a distressing event (Bennett, 1997).

Bereavement and widowhood are separately challenging and involve various changes for women. Anticipating loss and preparing for the death of a spouse are at least as stressful as the period immediately after the loss (Johansson & Grimby, 2012). Declines in mental health in the immediate post bereavement period have been reported frequently (Hewitt et al., 2012). Results from the Women's Health Initiative (WHI) suggest that mental health may improve somewhat in the 3 years following spousal loss (Wilcox et al., 2003). However, as the women who participated in the WHI were pre-screened and excluded on the basis of a diagnosis of depression, these results may be biased towards a more positive bereavement recovery.

ALSWH data were used to explore the mental health trajectories of women in the 1921-26 cohort before and after bereavement. Of this cohort, 2494 women became widowed between 1996 and 2011. Psychological distress among the women was measured by the SF-36 Mental Health Index (MHI), with higher scores indicative of better mental health. Figure 8-3 illustrates the mental health trajectories of these women.

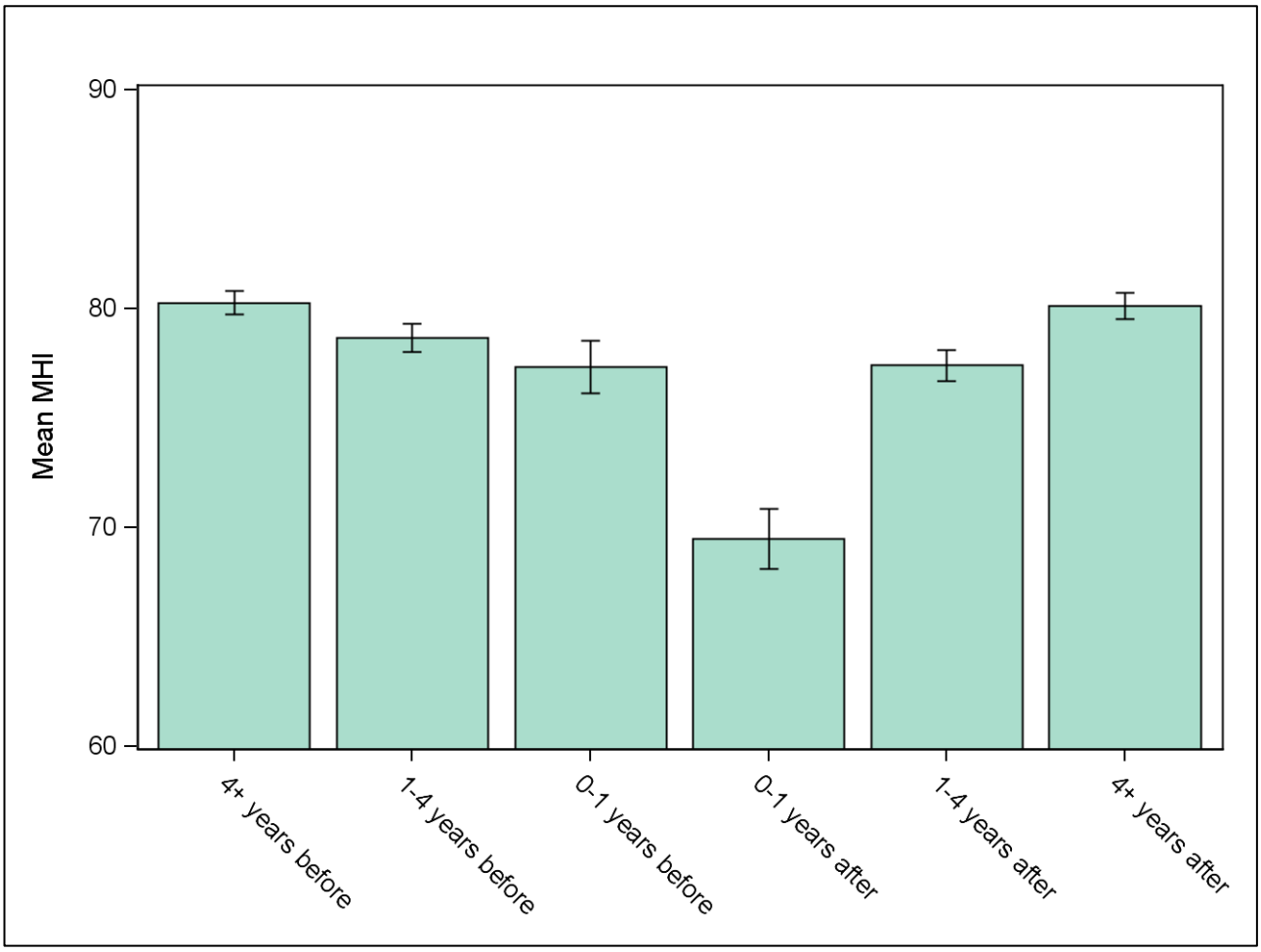

Figure 8-3 Mental health status associated with widowhood among the 1921-1926 cohort.

Psychological health, as measured by the MHI, shows a clear decline from >4 years preceding widowhood, with the most marked effect occurring at the time of widowhood and 12 months post bereavement. By >4 years after spousal loss, women's mental health has returned to pre-loss levels. These results clearly illustrate the effect of spousal loss on women's mental health, especially at the time of the event and for the following 12 months as the women transition to widowhood. The decline in mental health in the four years prior to the loss also indicates that the women may be experiencing anticipatory grief as they prepare for the death of their husband and for their own transition from wife to widow.

8.4.1 Summary - Widowhood and mental health

- For widowed women, mental health is lowest within the first year following the death of spouse.
- Mental health declines prior to bereavement, with declines in mental health apparent up to four years prior to the spouse's death.
- Mental health improves after an initial period of bereavement and returns to pre-loss levels after four years.

8.4.2 Discussion - Widowhood and mental health

Widowhood has a dramatic impact on mental health, which has been well documented in the literature. ALSWH provides a rare opportunity to observe changes in mental health that occur in the period prior to widowhood, and women's subsequent adaptation to loss and the re-establishment of their psychological equilibrium.

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9 Mental-Physical health co-morbidity

9.1 Introduction

It is estimated that approximately 14% of the world burden of disease is caused by mental illness. However this burden is most likely underestimated because of inadequate recognition of the connections between mental illness and other health conditions (Prince et al., 2007). The co-morbid state of depression incrementally worsens health compared with depression alone, other chronic diseases alone and any combination of chronic diseases without depression (Moussavi et al., 2007). Patients with multiple chronic diseases present additional challenges to general practitioners as multi-morbidity obscures symptom causation. In addition, time is a barrier to investigating the diagnosis of depression in primary care (Stanners et al., 2012). Therefore a better understanding of the relationship between common mental health conditions and other chronic conditions is needed.

9.2 Heart disease and mental health

Coronary heart disease was the leading cause of death for both women and men in 2009 (AIHW, 2012). Heart disease also causes the greatest burden of disease followed by anxiety/depression and type 2 diabetes (AIHW, 2012). Psychological distress has been found to be significantly associated with cardiovascular disease in working Australians (Holden et al., 2010) after adjusting for a range of socio-demographic characteristics.

9.2.1 Women born 1946-51

Berecki-Gisolf et al. (2012) recently considered comorbid depression and anxiety as predictors of new onset heart disease, using a sample of 11,828 women from the ALSWH cohort born 1946-51 who did not report having a heart condition in Surveys 1 and 2. The definition of heart disease included heart attack and angina. Data from Surveys 2-5, including new onset of heart disease, were included for these 11,828 women. Health status, lifestyle factors and socio-demographic characteristics were defined based on questions asking women whether they had been diagnosed or treated for the condition in the 3 years prior to the relevant survey. A history of comorbid mental health conditions (depression, anxiety) was created for Surveys 3-5 using data from previous surveys.

Table 9-1 Association between comorbid mental health status and new onset of heart disease in the 1946-51 cohort.

	Unadjusted	Adjusted #
History of comorbid status	No depression and no anxiety	No depression and no anxiety
Depression, no anxiety	↑↑	
Anxiety, no depression		
Depression and anxiety	↑↑↑	↑↑

Note: # adjusted for hypertension, diabetes, menopausal status, level of exercise, smoking status, BMI, age, relationship status, education, area of residence, and difficulty managing on income

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

This study concluded that in mid-aged women, a new onset of heart disease is associated with a history of comorbid anxiety and depression, even after accounting for the influence of health status, lifestyle factors and socio-demographic characteristics (see Table 9-1).

9.2.2 Women born 1921-26

Strodl et al. (2003) explored associations between stress and coronary heart disease in older women using a sample of 503 women from the ALSWH cohort born 1921-26 who reported a new diagnosis of angina or myocardial infarction (symptomatic coronary heart disease [CHD]) between Survey 1 and 2. Psychosocial factors at Survey 1 including social support, time pressure, perceived stress, mental health status, and having a partner were considered for their association with the subsequent development of a heart disease. Other non-psychosocial factors included were: area of residence, education, frequency of GP visits, hypertension, diabetes, nutrition risk, BMI, level of exercise, alcohol use, hormone replacement therapy, and smoking status. Moderate to high levels of perceived stress compared with no stress was the only psychosocial factor significantly associated with a new diagnosis of symptomatic coronary heart disease after adjusting for other factors.

9.3 Stroke and depression

Stroke is a major cause of disability and death (Johnson et al., 2009) with women experiencing higher rates of stroke than men and less favourable post-stroke outcomes (Reeves et al., 2008). Although the development of depression after stroke is well established (Hackett et al., 2005), depression as a risk factor for subsequent stroke is poorly understood, partly due to inconsistent findings from studies. Although recent reviews concluded that, overall, depression is a risk factor for stroke, differences between study results were evident, particularly among women and there was a suggestion of a different strength of association in different age groups.

9.3.1 Women born 1946-51

A sample of 10,547 women from the ALSWH cohort born 1946-51 and without a history of prior stroke, was included in a recent study (Jackson, 2013). These women had complete data on depression and other stroke risk factors, as well as stroke outcome at the subsequent survey, for at least one time period between Surveys 2-6 (e.g., Survey 2-3, 3-4 etc.). Depression was defined at each time point as being present if women reported taking anti-depressant medication or if they scored ≥10 on the Center for Epidemiological Studies Depression Scale 10 item short version (CESD-10). The latter identifies current depressive symptoms to a degree consistent with clinical depression. Sensitivity analyses using alternate definitions of depression, including self-reported diagnosis of or treatment for depression, were also performed. A range of demographic, lifestyle, and physiological stroke risk factors were explored to understand the effect of depression on incidence of stroke.

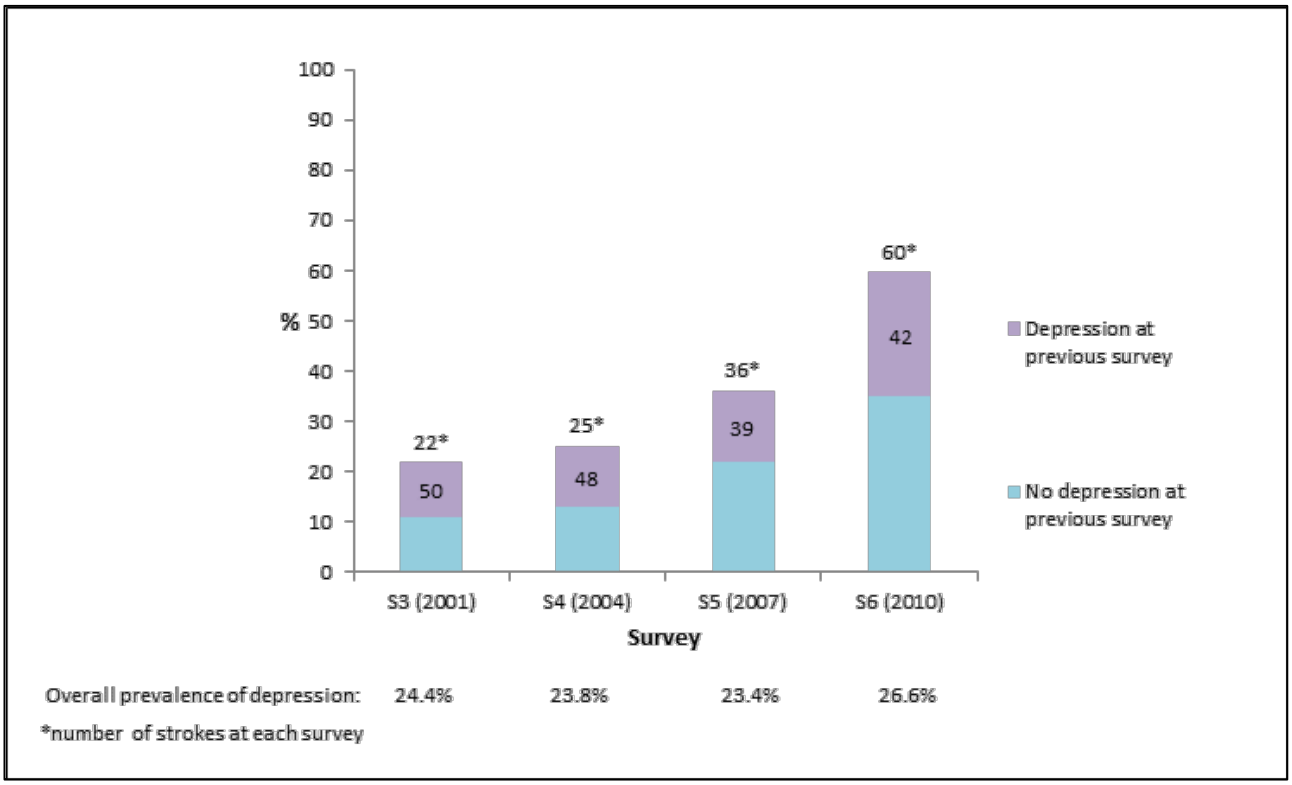

Figure 9-1 1946-51 cohort: Depression and stroke co-morbidity.

Figure 9-1 shows at Surveys 2 and 3, 48-50% of the women with a diagnosis of stroke in the previous 3 years had depression at the previous survey (that is, immediately prior to the 3 year period relevant to their stroke episode). In Surveys 4 and 5 this reduced to approximately 40% which is still considerably higher than the prevalence for the cohort overall (25%).

Table 9-2 demonstrates that depression is strongly associated with first stroke even after adjusting for a range of socio-demographic, lifestyle and physiological factors known to be associated with stroke. Sensitivity analyses showed the same results using alternate definitions of depression. This study concluded that depression was a strong risk factor for stroke in mid-aged women.

Table 9-2 Factors associated with a subsequent first stroke event for the 1946-51 cohort.

	Unadjusted	**Adjusted[#]**
Depression		
No depression	reference	reference
Depression	↑↑	↑↑
Age (continuous variable)		
Age in years	↑	↑
History of hypertension		
No hypertension	reference	reference
Hypertension	↑↑	
History of heart disease		
No heart disease	reference	reference
Heart disease	↑↑↑↑	↑↑
History of diabetes		
No diabetes	reference	reference
Diabetes	↑↑	
Hysterectomy / oophorectomy		
No Hysterectomy/oophorectomy	reference	reference
Hysterectomy/ oophorectomy	↑↑	
Current smoker		
Not a current smoker	reference	reference
Current smoker	↑↑	
Alcohol intake		
Low risk drinker	reference	reference
Non-drinker/ rarely drinks	↑↑	
High risk / risky drinker		
Level of Exercise		
None	reference	reference
Low		
Moderate	↓	
High	↓↓	
Body Mass Index (BMI)		
BMI as a continuous variable		

Note: # adjusted for current age, education, home ownership

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

9.3.2 Women born 1921-26

A study by Strodl and Kenardy (2008) used a sample of 7,839 older women from the ALSWH cohort born 1921-26 to identify independent psychosocial risk factors for subsequent new diagnoses of stroke. Participants in the study had completed Surveys 1 and 2, did not report having already had a stroke at Survey 1 and had data available on the factors of interest. Psychosocial factors considered included mental health status, perceived stress, social support, life events, time pressure and currently having a partner. Non-psychosocial factors included frequency of GP visits, hypertension, heart disease, diabetes, nutritional risk, BMI, level of exercise, alcohol use, hormone replacement therapy use, smoking, area of residence and education level. Diabetes had the highest odds of being associated with subsequent stroke in older women, followed by poor mental health then hypertension. All other factors were no longer significant after adjusting for all factors in a 2 stage process.

9.4 Diabetes and mental health

Diabetes and poor mental health are both common conditions in Australia and Australians with diabetes have a higher prevalence of poor mental health than those without diabetes (AIHW, 2011).

9.4.1 Prevalence of co-morbid diabetes and psychological distress

A recent AIHW report on diabetes and poor mental health, which included ALSWH data, highlighted the limited availability of accurate estimates of the prevalence of poor mental health among people with diabetes (AIHW, 2011). Table 9-3 shows that, in the ALSWH cohorts, the prevalence of psychological distress was higher in those with diabetes compared to those without diabetes in the 1946-51 cohort (aged 56-61 years at the time of the survey). While the same pattern appears with the other cohorts, the difference in prevalence of psychological distress between those with and without diabetes was not significantly different in the other age groups (AIHW, 2011).

Table 9-3 Proportion of women with psychological distress, for those with and without diabetes

	With diabetes	Without diabetes
Age group (year of survey)		
28-33 years (2006)	19.4%	14.7%
56-61 years (2007)	22.0%	12.0%
82-87 years (2008)	14.3%	11.7%

Source: Australian Institute of Health and Welfare, 2011. Diabetes and poor mental health and well-being: an exploratory analysis. Diabetes series no. 16, CVD 55, Canberra: AIHW. Analysis of ALSWH data: Survey 4 of young women in 2006, Survey 5 of mid-aged women in 2007, and Survey 5 of older women in 2008.

9.4.2 Diabetes and mental health in 1921-26 cohort

Strodl and Kenardy (2006) examined the relationship between psycho-social risk factors and a new diagnosis of diabetes in a study of 10,300 older women from the ALSWH cohort born 1921-26, who had completed Surveys 1 and 2. Women were asked 'In the past three years have you

been diagnosed or treated for diabetes?' Type of diabetes was not asked. By subtracting those who reported not having diabetes in Survey 1 from those who reported having been diagnosed with diabetes in Survey 2, a group of 243 older women was identified as being diagnosed with diabetes for the first time in the previous three years. Similarly, by identifying women who reported not having been diagnosed in both Surveys 1 and 2 a comparison group of 8,653 older women was identified.

Table 9-4 Factors associated with new onset of diabetes for women born between 1946-51, factors considered separately and after adjusting for other relevant factors in combination.

	Unadjusted[¥]	**Adjusted[#]**
Perceived stress		
No stress	reference	reference
Minimal stress		
Moderate/high stress		
SF36 Mental health Index		
No psychological distress	reference	reference
psychological distress	↑↑	↑↑
Duke Social support Index		
Very high support	reference	reference
High support	↑	
Low-fair support		
Relationship status		
Current partner	reference	reference
No current partner	↑	
Education		
No formal qualifications	reference	reference
Primary school	↓	
Secondary school	↓↓↓	↓↓↓
Tertiary education	↓↓	
Body Mass Index (BMI)		
Healthy	reference	reference
Overweight	↑↑	↑↑
Obese	↑↑↑↑	↑↑↑↑
Hypertension	↑↑	↑↑

¥ Other non-psychosocial factors included in unadjusted analysis were: health behaviours of smoking, *alcohol use*, *nutritional risk*, *exercise*; menopause status: hormone replacement therapy use (those in italics were significant in unadjusted models but none were significant in adjusted model).

GP use was also included in adjusted model.

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship.

↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

As shown in Table 9-4, this study concluded that the psychological factors of having poor mental health, having moderate social support and not having a current partner were associated with subsequent onset of diabetes in older women, even after accounting for traditional risk factors of hypertension, BMI, alcohol use, nutrition risk factors and lack of exercise.

9.5 Arthritis and mental health

Arthritis has been a national priority health condition in Australia since 2002 (AIHW, 2008) and has been found to be co-morbid with psychological distress (AIHW, 2008; Holden et al., 2010). More than 1.3 million (6.5%) Australians have osteoarthritis and its prevalence increases with age. Rheumatoid arthritis affects approximately 2% of the population and females are twice as likely as males to report this condition (AIHW, 2008).

9.5.1 Women born 1946-51

A recent study by Harris et al. (2012) examined the relative importance of psychosocial factors among women with arthritis from the 1946-51 cohort. A total of 10,509 women who responded to questions regarding arthritis diagnosis at Survey 5 were included in the analysis. Arthritis was defined as reporting having been diagnosed by a doctor with osteoarthritis, rheumatoid arthritis or another form of arthritis in the previous three years. Table 9-5 shows the relationship between each psychosocial variable of interest and arthritis when considered individually and then adjusted for other factors. Importantly, when adjusting for demographics, quality of life and other psychosocial factors, being diagnosed with an anxiety/nervous disorder was found to be the strongest factor associated with having arthritis. The study concluded that women with arthritis have widespread psychosocial concerns, particularly relating to chronic stress perception and poor mental health.

Table 9-5 Psychosocial factors associated with arthritis for women born between 1946-51, for factors considered separately and after adjusting for other relevant factors in combination.

	Unadjusted	Adjusted
Perceived stress		
No stress	reference	reference
Minimal stress	↑↑	
Moderate/high stress	↑↑↑	
Negative life events		
No event	reference	reference
Death of family member or close friend	↑	
Illness of family member of close friend	↑	
Interpersonal relationship difficulties	↑	
Financial strain	↑	
Psychiatric diagnosis		
No depression	reference	reference
Depression	↑↑	
Anxiety/nervous disorder	↑↑	↑↑
Perceived social support		
All the time	reference	reference
Most of the time	↑	
Some of the time	↑↑	
None/little of the time	↑↑	
Life approach (continuous variable)		

	Unadjusted	Adjusted
Optimistic	↓	

Other factors included in model in addition to those listed are: SF-36 *physical functioning, bodily pain, general health*, social functioning, mental health, emotional and physical role limitations; demographic factors of: area of residence, *age*, relationship status, education; health behaviours of *BMI*, smoking, alcohol use; menopause status: *hormone replacement therapy use* (those in italics were significant in the adjusted model).

Arrows indicate strength of association (probability ratios) significant at the p<0.05 level. No arrow indicates there is no evidence of a relationship. ↑ (1.0<1.5) ↑↑ (1.5<2.5) ↑↑↑ (2.5<3.5) ↑↑↑↑ (3.5<4.5) ↑↑↑↑↑ (4.5+);
↓ (<1.0-0.65) ↓↓ (<0.65-0.4) ↓↓↓ (<0.4-0.3) ↓↓↓↓ (<0.3-0.2) ↓↓↓↓↓ <0.2

9.5.2 Women born 1921-26

Parkinson et al. (2010) studied arthritis and older women using a sample of 7,088 older women from the ALSWH cohort born 1921-26 who completed Survey 4 when they were 79-84 years old. Women were asked 'In the past three years have you been diagnosed or treated for arthritis?' Arthritis type was not asked, however it would be expected that the type of arthritis in this age group would be predominantly osteoarthritis. Arthritis is not a natural part of ageing, yet 63% of this sample reported a diagnosis of arthritis. Arthritis was found to be comorbid with a number of other health conditions, including mental health conditions. A significantly higher percentage of women had depression in the group with arthritis compared with the group without (9% compared with 4.5% respectively). Similarly, 6.9% of the group with arthritis had anxiety compared with 4% in the group without arthritis. This study adds support to concerns about the association of co-morbidities with arthritis, particularly psychological co-morbidities as these indicate reduced quality of life.

9.6 Summary

- A new onset of heart disease was associated with a history of comorbid anxiety and depression in mid-aged women, as was perceived stress in older women.
- A new onset of stroke was associated with depression in the previous three years for mid-aged women, and psychological distress was associated with subsequent stroke for older women.
- Poor mental health was associated with the future onset of diabetes in older women.
- A higher proportion of older women with arthritis also had depression compared with older women without arthritis.

9.7 Discussion

This report highlights the role of poor mental health in the development of later physical health problems, namely heart disease, stroke, and diabetes, and presents findings from published work utilizing ALSWH data. For heart disease, the association with anxiety or depression was only significant when there was a comorbid anxiety and depression, which is consistent with other studies (Rutledge et al., 2009; Wiltink et al., 2011). But few studies have longitudinal data enabling the exploration of causal pathways. Having co-morbid anxiety and depression in combination with

other health conditions has been reported to contribute to worse health outcomes (Katon et al., 2007). A recent Australian study reported that patients with depression had a two-fold increased risk of cardiac mortality and heart rate variability (a robust predictor of cardiac mortality), and patients with co-morbid anxiety had even greater risks (Kemp et al., 2012).

ALSWH provides data on three nationally representative cohorts of women of different age groups, enabling prospective exploration of a range of health outcomes as they develop. This is particularly valuable to understanding the range of factors that contribute to the onset of health conditions. This report described an earlier ALSWH finding that poor mental health was associated with later onset of diabetes, which is consistent with a 2011 systematic review (Renn et al., 2011) reporting an inter-connected pattern of association between diabetes and poor mental health. Similarly, the findings presented here on the association between poor mental health and subsequent stroke are consistent with a meta-analysis of prospective studies by Dong (2012). However, the ALSWH population is younger than other studies and stronger effects of association in this younger age group were found. This is a concerning new finding, given the large group of ageing baby boomers.

Some of the studies previously mentioned look at associations of a physical health condition such as diabetes with poor mental health at the same point in time, rather than looking at future health outcomes. The findings reported here, that women with stroke, diabetes and arthritis are at increased risk of also having poor mental health at the same point in time, are consistent with other studies examining various health issues including stroke (Fan et al., 2009; Wiltink et al., 2011), diabetes (Fan et al., 2009; Wiltink et al., 2011) and arthritis (Caughey et al., 2008; Holden et al., 2010). These findings highlight the potential for poor mental health to compound health problems for women. For example, the arthritis study highlighted the role of psychosocial factors, particularly anxiety, in arthritis morbidity.

Co-morbid anxiety may be a primary and somewhat overlooked concern for women with other health conditions. As such, women with arthritis, stroke, CVD, diabetes or depression could benefit from interventions targeted at reducing chronic stress and anxiety. As can been seen from the studies reported in this chapter, poor mental health, including anxiety, puts women at risk of developing a range of health conditions that are recognised by the Australian government as high priority conditions. Given that 40% of women in the 1946-51 cohort and 47% of women in the 1973-78 cohort had poor mental health, and most of these experienced either pure anxiety or co-morbid anxiety and depression, more emphasis should be given to addressing anxiety as a priority mental health condition.

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Appendices

Appendix A: Glossary of Terms

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
Antenatal	The period before birth, during pregnancy
Chance	Probability or odds of something occurring
Cohort	A group of individuals defined by a common characteristic, in the case of ALSWH the defining characteristic is birth years (eg 1973-78 cohort were all born between these years). A cohort is followed over time to study outcomes related to different potential factors.
Cross-sectional	Studies carried out at a single point in time
Gender	For the purpose of this report the term 'gender' is used when referring to aspects of character or behaviour related to social expectations, roles and structures that differ for women and men
Incidence	The number of new cases of a disease in a defined period divided by the number of individuals susceptible at the start or mid-point of the period
Longitudinal	Studies that collect data on several occasions on or from the same group of individuals (a cohort).
Perinatal	The period from conception to 12 months postpartum.
Prevalence	The number (proportion) of people with a disease at a given point in time or within a defined interval period.
Psychosocial assessment	The clinical evaluation of risk factors that may contribute to mental health outcomes.
Self-report	Data collected from a study participant via validated or non-validated survey questions rather than, e.g., via a health professional's clinical assessment or a pathology test.
Odds Ratios	The ratio of probabilities of two complimentary events, typically the probability of having a disease divided by the probability of not having the disease
Sex	For the purpose of this report we use the term 'sex' when referring to aspects of behaviour or physiology functioning that are biologically related
Validated measure	The validity of a survey tool for research refers to its adequacy to measure the characteristics it is supposed to measure with reliability and accuracy

Appendix B: Measures of mental health

B.1 Diagnosis or treatment for mental health conditions

In Survey 1 women were not asked questions regarding diagnosed or treated mental health conditions.

Diagnosis or treatment for Depression
In Survey 2 women were asked the following:
'Have you EVER been told by a doctor that you have depression… in the past 2* years?'
'Have you EVER been told by a doctor that you have depression… more than 2* years ago?'

In Surveys 3-6 women were asked 'In the past 3 years have you been diagnosed or treated for Depression?'

Diagnosis or treatment for Anxiety
In Survey 2 women were asked the following:
'Have you EVER been told by a doctor that you have Anxiety… in the past 3* years?'
'Have you EVER been told by a doctor that you have Anxiety … more than 3* years ago?'

In Surveys 3-6 women were asked 'In the past 3 years have you been diagnosed or treated for Anxiety?'

*'2 years' was time period asked for women in the 1946-51 cohort. Women in the 1921-26 cohort were asked '3 years', and women in the 1973-78 were asked '4 years'.

B.2 Perinatal mental health

Young women (born 1973-78) were asked the following Yes / No questions:

'Were you diagnosed or treated for the following conditions (separate response options were available for each child):

- Antenantal depression
- Postnatal depression
- Antenatal anxiety
- Postnatal anxiety'

B.3 SF-36 Mental health Index 5 item scale (SF36 MHI)

The original version of the SF-36 five-item mental health scale (Ware et al., 1993) was used. The SF-36 mental health scale (SF-36 MHI) has five items selected from the 38 items of the mental health index (MHI) because they best predict the summary score for the 38 items of the MHI,

correlated 0.95 with validated 38 item MHI (Ware & Sherbourne, 1993). The MHI measures general mental health (psychological distress and well-being) (Ware et al., 1992). It includes one or more items from each of the four major mental health dimensions (anxiety, depression, loss of behavioural/emotional control and psychological well-being) (Ware & Sherbourne, 1993). The MHI has been validated against the DSM-IV Axis 1 psychiatric disorders in a general population sample using computer assisted personal interviews and the Munich Composite International Diagnostic Interview (Rumph et al., 2001). Response options range on a six-point scale from one ('all of the time') to six ('none of the time'). After reverse scoring of some items, scores are summed and transformed to a score ranging from 0-100 with higher scores indicating good health. Missing items can be calculated, if less than half is missing, using a scoring algorithm provided by the survey developers(Ware & Sherbourne, 1993). The study by Rumph et al. recommended a cut point of 60 however a more conservative and widely used cut point of less than or equal to 52 was selected for the current report. This cut point has been validated in two studies (Holmes, 1998; Silveira et al., 2005) and is referenced by the authors of the SF-36.

B.4 Center for Epidemiological Studies Depression Scale 10-item (CESD-10)

The current report used the CESD 10-item short form of the original CESD which was designed to measure depressive symptomatology in the general population. The original CESD is a validated scale that has been tested in household interview surveys and psychiatric settings (Radloff, 1977). The CESD-10 correlates well with the CESD (k=0.97) showing good predictive accuracy compared with the original scale(Andresen et al., 1994). Response options range on a four-point scale from zero ('none of the time'), to three ('most of the time'). A score is assigned by totalling all numbers, after reversing the positive mood items. The total score can range from 0-30 with a higher score representing a greater degree of depressed mood. Missing items can be calculated if nine of ten items are answered, using a person-specific estimated average score for completed items (Andresen et al., 1994). A cut-point of greater than or equal to 10 has been widely used and validated in two studies (Andresen et al., 1994; Boey, 1999).

B.5 Goldberg Anxiety and Depression Scale – Anxiety sub-scale (GADanx)

The Goldberg Anxiety and Depression Scales provide two separate measures of severity for each disorder (Goldberg et al., 1988). They were designed for use by non-psychiatrists, including use in surveys. The scales were derived by latent trait analysis from a standardized psychiatric research interview. The anxiety scale consists of nine items with 'yes' or 'no' response options. It has a sensitivity of 82% and a positive predictive value of 0.56. A cut point of >5 is recommended (Goldberg et al., 1988). Further validation by MacKinnon et al. (1994) has recommended the use of this scale in epidemiological investigations. However, a study by Koloski et al. (2008) reported that it did not adequately distinguish between anxiety and depression in older women.

B.6 Other measures: Medical Outcomes Study Social Support Scale6 item short form (MOS-SSS6)

We used a six item short form of the MOS Social Support Survey. The original 19 item survey was developed to measure functional social support in people with chronic disease (Sherbourne & Stewart, 1991). The MOS Social Support Survey measures four dimensions of functional support (tangible, affectionate, positive social interaction and emotional/informational). It also has an overall 19 item functional social support index. When developed it was validated as having reliable internal consistency (all Alphas >0.91) (Sherbourne & Stewart, 1991). More recently it has been validated in older adults (Robitaille, 2011). Six items from the scale were used and validated against the overall 19 item functional Social Support Index. This six item short form of the MOS Social Support Survey (MOS-SSS6) was strongly correlated with the overall 19 item functional social support Index (Alphas 0.97-0.99) when tested in both the 1973-78 and 1946-51 cohorts of the ALSWH. Response options range from one ('none of the time') to five ('all of the time'). Scores are totalled and range from 0-30. Scores were grouped into tertiles based on the distribution at the first available survey (Survey 2) for each cohort. For the younger (1973-78) cohort the categories were as follows: tertile 1= score of ≤22, tertile 2= score of >22 ≤27, tertile 3= >27 and ≤30. For the mid-aged (1946-51) cohort the tertile categories were as follows: tertile 1= score of ≤22, tertile 2= score of >22 ≤26, tertile 3= >26 and ≤30.

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Appendix C: Instructions for interpreting plot graphs

Explanation using Figure 3.8

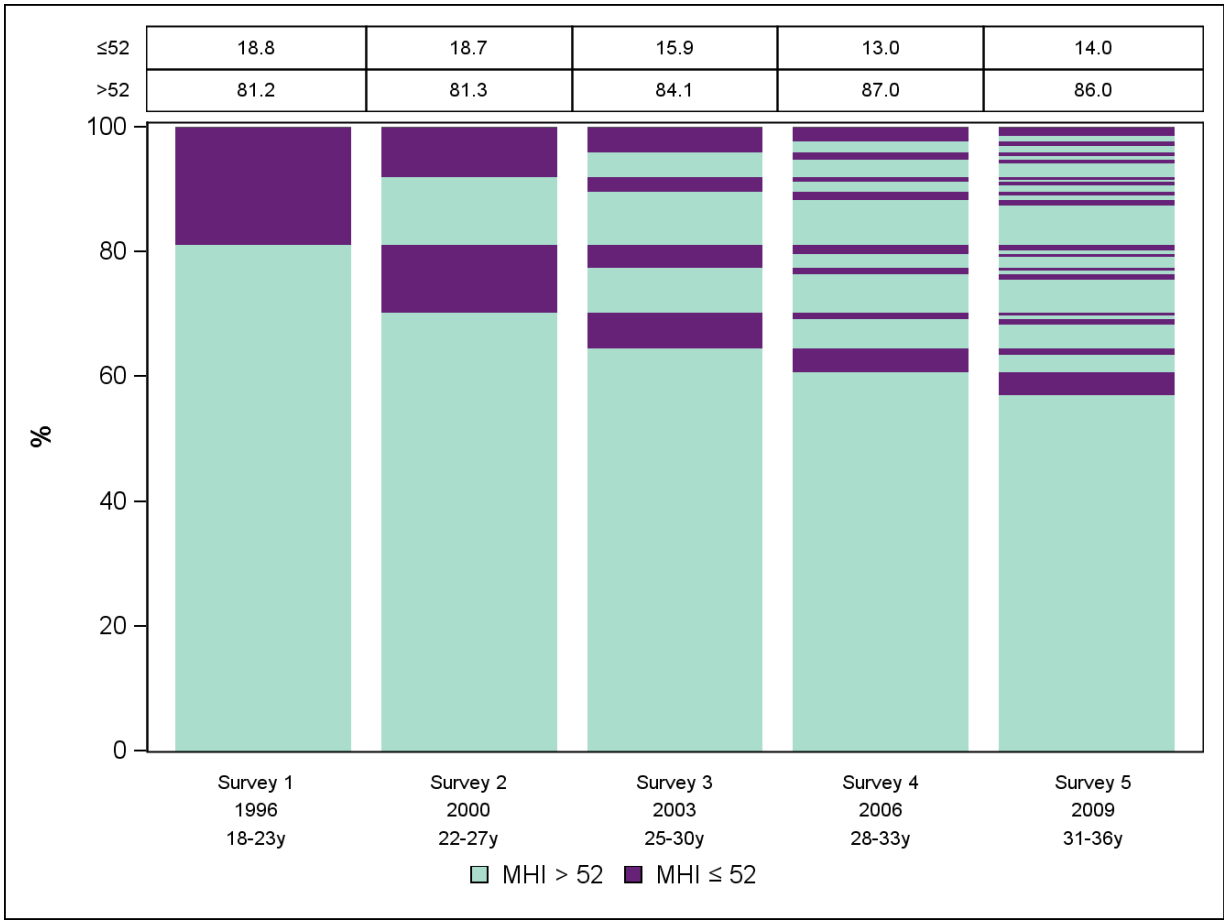

Figure C1 (copied from Figure 3-8 on page 29) Percentage of younger women (born 1973-78) with psychological distress (purple areas) in past four weeks using the SF-36 MHI ≤52.

The far left column of Figure C above shows that Survey 1 in 1996 had more young women with good mental health than poor mental health. This interpretation is based on the green section being considerably greater than the purple section. The key at the bottom of the graph indicates that the green section is made up of women had who had a score greater than 52 on the SF-36 Mental Health Index (MHI), indicating good mental health. The table at the top of the far left column reports the proportion of 81.2% women who had a score of greater than 52. The far left column also shows that close to 20% had poor mental health (purple section of far left column) which is also reported in the table on the top of the far left column with the proportion 18.8% having a score of ≥52 indicating poor mental health.

In 2000 (Survey 2) the column second from the left is divided into four sections, two purple and two green. The bottom green and purple sections of column two line up with the green section in column one (far left) and describe the mental health status at Survey 2 for women who had good mental health at Survey 1 showing that some women with good mental health in 1996

experienced poor mental health in 2000 while the greater proportion continued to experience good mental health. The top set of purple and green sections in the column representing Survey 2 lines up with the purple section of column 1 and represents the mental health status at Survey 2 for women who experienced poor mental health at Survey 1. This shows while some women with poor mental health at Survey 1 continued to have poor mental health at Survey 2, many of them went on to experience good mental health at Survey 2.

The column third from the left (the middle column overall) representing Survey 3, collected in 2003, has eight sections, 4 purple and four green. The bottom green and purple sections line up with the bottom green section of Survey 2, indicating that while most women with good mental health at Survey 2 continue to have good mental health at Survey 3, some experience poor mental health, even though they had experienced good mental health at the previous two surveys (2000 and 1996). The green section second from the bottom in the column representing Survey 3, represents women who had good mental health in Survey 1 (green section), poor mental health in Survey 2 (bottom purple section) and good mental health in Survey 3 (second from bottom green section). The green section third from the bottom in the column representing Survey 3 represents women who had poor mental health in Survey 1 (purple section) and good mental health in Surveys 2 and 3. The purple section third from the bottom in the section representing Survey 3 represents women who had poor mental health in Survey 1 (purple section), good mental health in Survey 2 (second from the bottom green section) and poor mental health in Survey 3. The top purple section in Survey 3 represents women who continued to have poor mental health across all of the first three surveys (1996, 2000 and 2003).

These same patterns continue into the next two columns representing Surveys 4 and 5 with the bottom green section in the far right column representing women who had good mental health in Surveys 1, 2, 3, 4, and 5; and the top purple column in the far right column representing women who had poor mental health across all surveys (1996, 2000, 2003, 2007 and 2009).

Appendix D: Comparison of samples

Comparison of those with data at all waves with those with data at any wave.

In analyses involving changes over time, for example in chapters 3 and 4, only those with data available in all waves could be included. Figures D1 to D3 below show the difference in prevalence for those with data in all waves (o) and those with data at some but not all waves (+). From this we can see that there was very little difference in prevalence of diagnosed depression (Figure D1) or anxiety (Figure D2) in the young and mid-aged cohorts but the difference increased in the older age cohort, most likely due to loss to follow-up due to deaths in this cohort. The difference was slightly more noticeable for psychological distress (Figure D3). In all instances where there was a difference; women who had data available in all waves had better mental health. These differences do not in any way reduce the strength of the associations found in this report; they do

however indicate that people with poor mental health are slightly under-represented in analyses over time, particularly for older women.

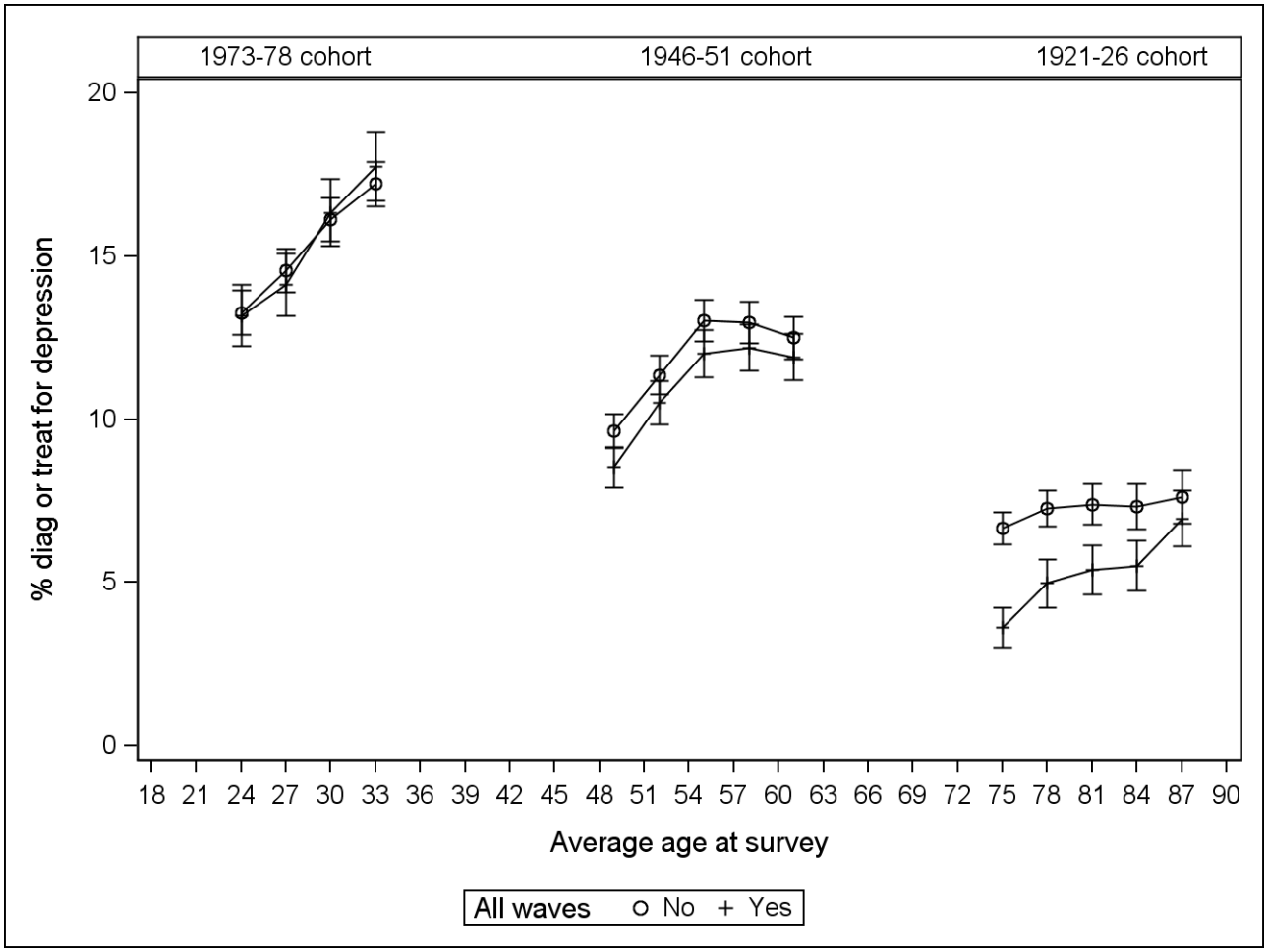

Figure D1 Diagnosis or treatment of depression for two groups: those with data in all waves (o) and those with data in any waves but not all (+); plotted against the average age of the cohort at the time of the survey

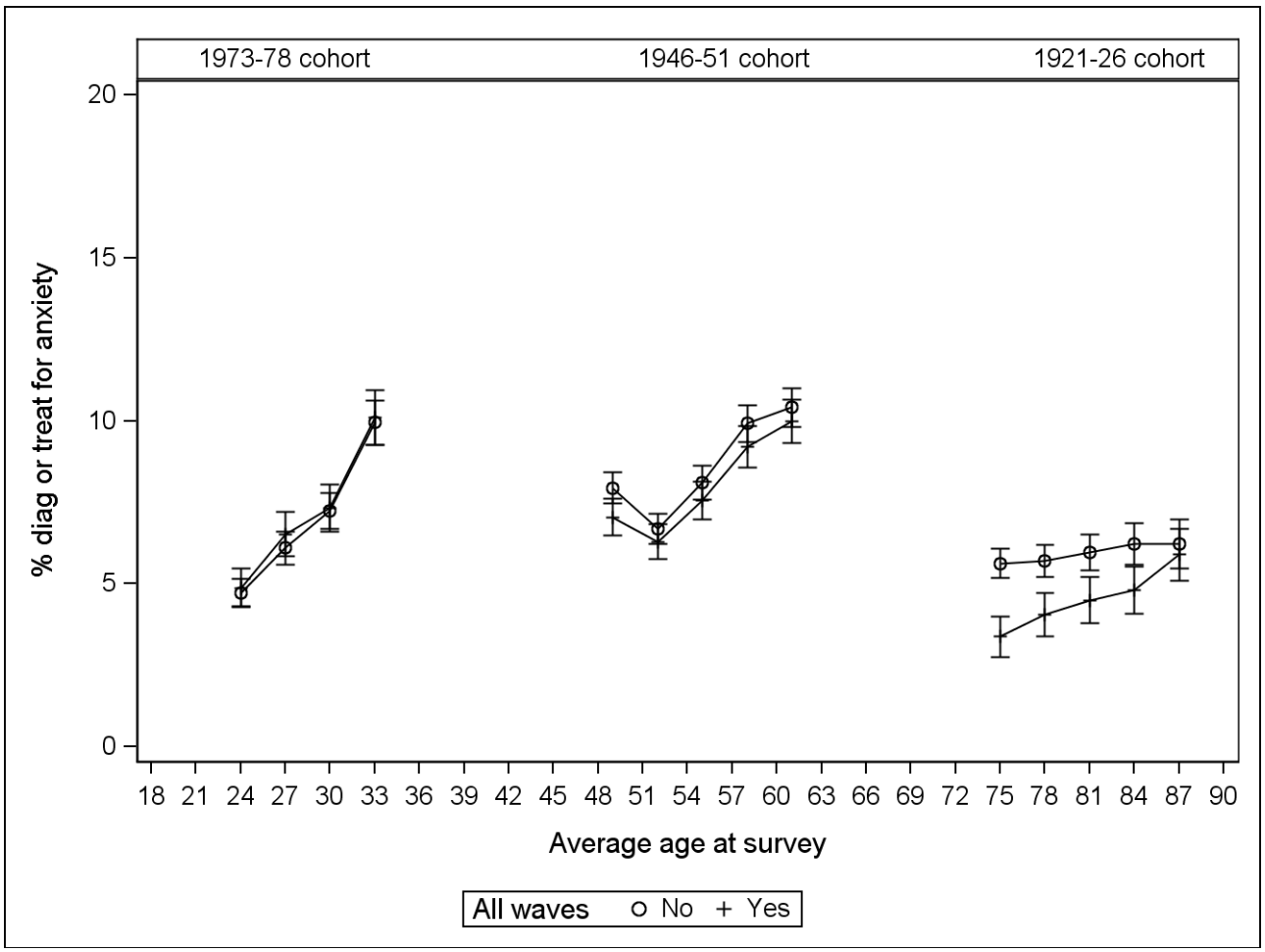

Figure D2 Diagnosis or treatment of anxiety for two groups: those with data in all waves (o) and those with data in any waves but not all (+); plotted against the average age of the cohort at the time of the survey

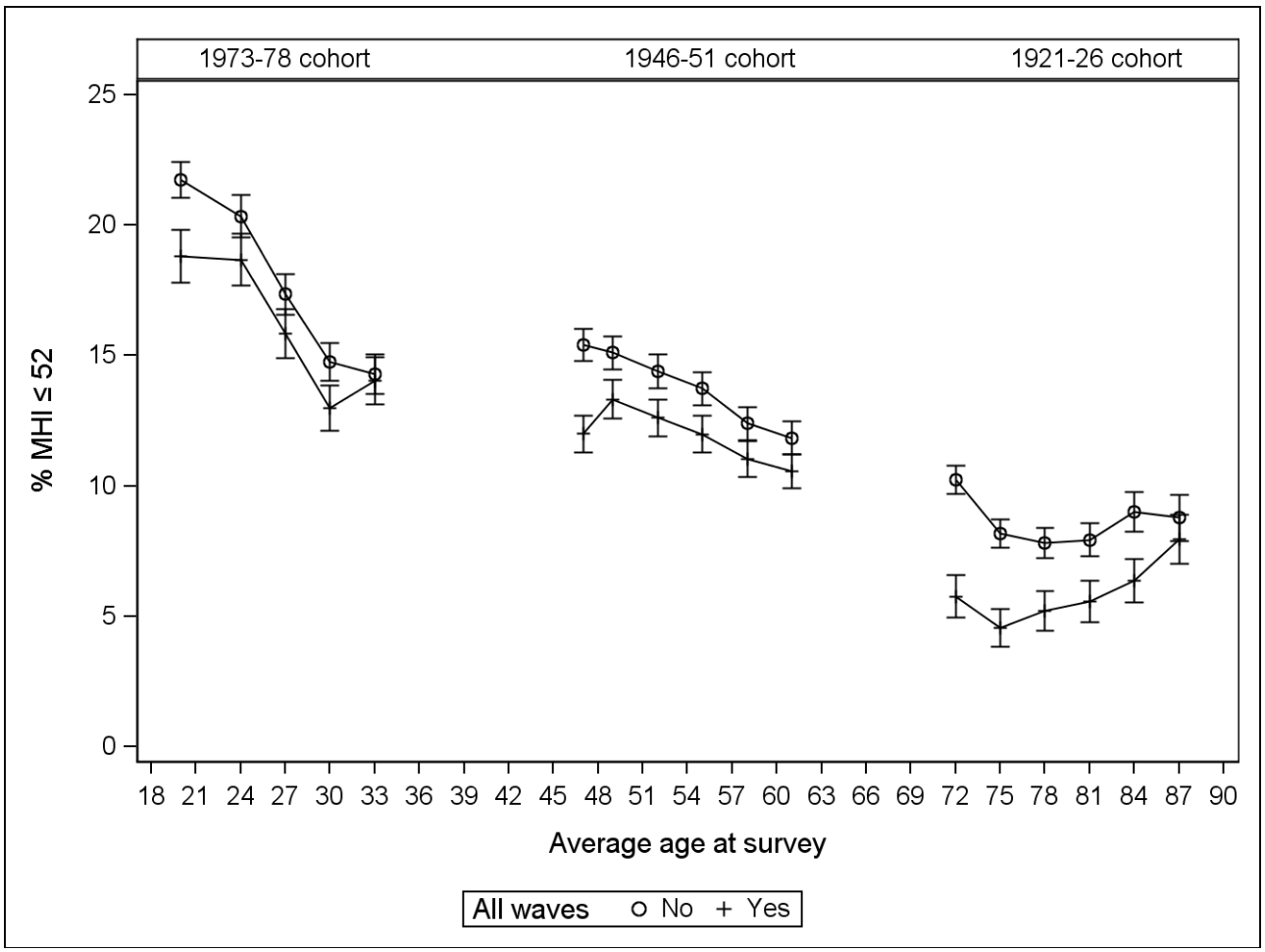

Figure D3 Psychological distress using the SF36 MHI (≤52) for two groups: those with data in all waves (o) and those with data in any waves but not all (+); plotted against the average age of the cohort at the time of the survey

Appendix E: Attachments relevant to Chapter 4

ATC/DDD Index

NERVOUS SYSTEM
N06 **PSYCHOANALEPTICS**
This group comprises antidepressants, psychostimulants, nootropics anti-dementia drugs and combinations with psycholeptics. Antiobesity preparations are classified in A08 - Antiobesity preparations, excl. diet products.

N06A **ANTIDEPRESSANTS**
This group comprises preparations used in the treatment of endogenous and exogenous depressions. The group is subdivided mainly according to mode of action. The various antidepressants have different modes of action and the classification will not reflect the exact mode of action of the various antidepressants.

- Lithium, see N05AN – Lithium
- Combination with psycholeptics, see N06C.

N06AX **Other antidepressants**
This group includes antidepressants, which cannot be classified in the preceding groups.
NB: the DDDs are based on treatment of moderately severe depressions.

ATC code	Name	DDD	U	Adm.R	Note
N06AX01	oxitriptan				
N06AX02	tryptophan				
N06AX03	mianserin	60	mg	O	
N06AX04	nomifensine	0.15	g	O	
N06AX05	trazodone	0.3	g	O	
N06AX06	nefazodone	0.4	g	O	
N06AX07	minaprine	0.1	g	O	
N06AX08	bifemelane				
N06AX09	viloxazine	0.2	g	O	
N06AX10	oxaflozane				
N06AX11	mirtazapine	30	mg	O	
N06AX12	bupropion	0.3	g	O	
N06AX13	medifoxamine				
N06AX14	tianeptine	37.5	mg	O	
N06AX15	pivagabine				
N06AX16	venlafaxine	0.1	g	O	
N06AX17	milnacipran	0.1	g	O	
N06AX18	reboxetine	8	mg	O	
N06AX19	gepirone				
N06AX21	duloxetine	60	mg	O	
N06AX22	agomelatine	25	mg	O	
N06AX23	desvenlafaxine	50	mg	O	
N06AX24	vilazodone				
N06AX25	Hyperici herba				

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