

**FIGURE 2**

**SURVEY PLAN FOR THE THREE MAIN COHORTS OF WOMEN FOR TWENTY YEARS.\*\***

	YEAR													
	96	97	98	99	00	01	02	03	04	05	06	07	08	09
<b>YOUNG</b>	<i>18-23</i>			<i>22-27</i>				<i>25-30</i>			<i>28-33</i>			
<b>MID-AGE</b>	<i>45-50</i>		<i>47-52</i>		<i>50-55</i>				<i>53-58</i>		<i>56-61</i>			
<b>OLDER</b>	<i>70-75</i>		<i>73-78</i>		<i>76-81</i>				<i>79-84</i>		<i>82-87</i>			

\*\*Figures in italics indicate the age of the women in each main cohort at the time of each planned follow-up survey. Dashed vertical lines indicate past, current and proposed funding periods.

although Aboriginal women from remote areas are under-represented.<sup>4</sup>

Baseline surveys were conducted for all three cohorts in 1996, and plans for the follow-up surveys of each main cohort over a 20-year period are displayed in Figure 2.<sup>5</sup> The first follow-up surveys of the mid-age and older cohorts in 1998 and 1999 achieved response rates exceeding 90 per cent. Development of the survey for the first follow-up of the young cohort is currently underway.

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**THE AUSTRALIAN LONGITUDINAL STUDY ON WOMEN'S HEALTH: SELECTED EARLY FINDINGS AND FUTURE RESEARCH OBJECTIVES FOR THE MAIN COHORTS**

*Wendy J Brown, Annette J Dobson, and the ALSWH Research Team  
Research Institute for Gender and Health  
University of Newcastle*

**INTRODUCTION**

Women's Health Australia is a major study by international standards, with the potential to make a significant contribution to the investigation of factors that enhance or inhibit good health for women. The Australian Government, through the Commonwealth Department of Health and Aged Care and the National Health and Medical Research Council, has made a commitment to the research

and to using the findings to improve the health care system's response to women's needs. Comparisons between the three age cohorts described in the previous article are of particular interest in establishing whether the nature and extent of health problems represent socially-constructed generational differences, or reflect the biological ageing process of women. The longitudinal design provides a unique opportunity to explore causal relationships between the use of health care services, life events, weight and exercise, violence, use of time (paid and unpaid work and leisure), and long-term health and well being. Our primary aim is to ensure that the findings are translated into policies and practices that are relevant, and reflect the social and cultural diversity of these three

generations of Australian women. This article describes some early findings of the study, and outlines the main research objectives for the main cohort studies for the next five years.

The study began with the objective of exploring the five key themes of:

- use of health care services
- weight and exercise
- life stages and key events (for example: childbirth, divorce, widowhood)
- domestic violence
- use of time (paid and unpaid work and leisure).

Some of the preliminary findings in each of these thematic areas, and the development of research questions for future focus in each of the main cohorts, are described below.

### **YOUNG WOMEN: STRESS, HEALTH RISKS, PARENTING AND BODY IMAGE**

Women in the young cohort (18–23 years) were born in the 1970s into a society experiencing escalating social, cultural, economic and technological change.<sup>1</sup> In the baseline survey, levels of stress were significantly higher among the young cohort compared with mid-age (45–50 years) and older women (70–75 years).<sup>2</sup> Young women reported the main sources of stress to be money, study, and work—employment.<sup>3</sup> Future surveys will explore the issue of stress in greater depth, and with a variety of measures. The relationships between stress and other health risk behaviours such as smoking, binge drinking, disordered eating and illicit drug use will also be investigated. As the study progresses it will be possible to ascertain whether high stress levels and their associated risks persist in this generation, or whether they are part of a life-stage phenomenon that will dissipate over time.

In 1996, physical and mental health were assessed using the Medical Outcomes Study Short Form health survey (SF-36).<sup>4</sup> Mean scores for both physical and mental health were significantly lower for women with young children compared to those without children. This may be due to having young children, or having children at a young age, or to differences in the socio-economic status between women who have children early or later in their lives. A comparison of health levels at baseline and follow-up for women who have children between 1996 and 2000 will be conducted relative to socio-economic status, the age of mother at the time of the first birth, and number of children. As the study progresses we will be able to establish the effect of the age at which women have their children on their long-term health outcomes.

In 1996, 28 per cent of young women were underweight according to the Body Mass Index (BMI)  $<20\text{kg.m}^{-2}$ , compared with only seven per cent of mid-age women and nine per cent of older women. While almost 80 per cent of young women had a BMI in the underweight or healthy weight range, 68 per cent of those with a BMI less

than  $25\text{kg.m}^{-2}$  (including 20 per cent of those with BMI less than  $18\text{kg.m}^{-2}$ ) said they would like to weigh less. A high frequency of dieting, and a history of beginning to diet before the age of 15, were associated with poorer physical and mental health, including depression.<sup>5</sup> Future surveys will address the question of whether high levels of body dissatisfaction persist as these women age and have children, and the physical and mental health consequences for underweight women who do and do not gain weight over time.

### **MID-AGE WOMEN: MULTIPLE ROLES, TIREDNESS, WEIGHT CONTROL AND MENOPAUSE**

The majority of women in the mid-age cohort (45–50 years) grew up in Australia during a period of strong economic growth and prosperity.<sup>1</sup> More than 90 per cent are mothers, and almost 20 per cent of those living in rural and remote areas have four or more children. More than 65 per cent are in paid work, and a further seven per cent work without pay in a family business or farm, or as volunteers. Among those engaged in work outside the home, 66 per cent and 55 per cent of full-time and part-time workers respectively still have children younger than 19 years living with them, and 20 per cent of women report regularly providing care or assistance to another person because of long-term disability or frailty. The long-term effect of multiple and changing roles on women's health (including depression, anxiety, and fatigue) will be explored according to response patterns found at baseline. For example, among women in this age group who still have children at home, optimal mental health was found among those who work between 25 and 34 hours per week in paid work outside the home.<sup>6</sup>

The most commonly reported physical symptom among mid-age women was tiredness, with more than two thirds reporting being 'constantly tired' at least some of the time. Tiredness was more prevalent among women who reported a history of 'low iron levels' at baseline, and these women had lower levels of well-being and vitality. At follow-up, mean scores for physical and mental health, as well as vitality, were significantly reduced for women who reported iron deficiency in the last two years, after correcting for the number of children, chronic conditions, symptoms, and hours worked.<sup>7</sup> The possibility that iron deficiency may be a reflection of either heavy menstrual bleeding or low dietary intake will be explored in future studies.

In 1996, one third of mid-age women who have a uterus reported menstrual symptoms such as heavy periods or severe period pain. Fewer than five per cent of women who reported menstrual symptoms in 1996 reported having had a hysterectomy at follow-up in 1998, but almost 15 per cent reported taking Hormone Replacement Therapy (HRT). The effect of different options chosen to deal with these symptoms on long-term health outcomes will be the focus of a future substudy. In addition, patterns

of response to these symptoms, including treatments, will be investigated according to geographical location. Data obtained in 1996 indicated a higher prevalence of hysterectomy among women living in rural and remote areas. Higher prevalence was also related to private health insurance, lower levels of education, being currently or previously married, having had other gynaecological procedures, and other (non-gynaecological) surgical procedures.<sup>8</sup> These trends indicate a need for more careful evaluation of gynaecological care for women in Australia, specifically those living in remote areas and with lower education levels. Over time, the project has the potential to explore the impact of hysterectomy and use of HRT on physical and mental health and quality of life for women in a range of circumstances.

Overweight and obesity were prevalent among mid-age and older women in 1996, increasing their risk of a wide range of physical and mental health problems (such as hypertension, diabetes, tiredness, and back pain).<sup>9</sup> Scores for several subscales of the SF-36 (such as general health, role emotional, social function, mental health, and vitality) were optimal when BMI was in the range 19–24 kg.m<sup>-2</sup>.<sup>9</sup> The role of menopause in mid-life weight gain will be explored in the next follow-up by comparing weight gain among women who do and do not experience menopause during this period. Factors such as age, socio-economic status, weight cycling (repeated fluctuations in weight as a result of unsuccessful attempts to diet), dieting, disordered eating, physical inactivity, use of HRT, hysterectomy, smoking and changes in social roles will also be considered in relation to mid-age increases in weight, as will the onset of weight-related conditions such as hypertension, type II diabetes, and depression.

### **OLDER WOMEN: HEALTHY AGEING, INDEPENDENCE, AND PARTICIPATION**

Born in the 1920s, women in the older cohort have experienced the Great Depression, World War II, and being mothers to the 'baby boomers' in the 1950s.<sup>1</sup> More than 68 per cent were born in Australia and a further 10 per cent arrived in Australia as children or young adults.

The initial data provided a clear picture of positive ageing among older Australian women, despite the increasing number of physical, emotional, mental and social difficulties that confront them. They reported much lower stress levels than women in the mid-age and younger cohort. Although their physical health scores (on the physical functioning subscale of the SF-36) were poorer than those of younger age groups, their mental health scores (as illustrated by the mental health index of the SF-36) were higher than those of both young and mid-age women.

Intentional over-sampling of women from rural and remote areas provides sufficient numbers of women from different geographic locations (for example: metropolitan,

rural and remote) to explore how the experiences and health outcomes of growing older vary according to location. Older women living in rural and remote areas reported poorer access to, and greater dissatisfaction with, the cost of health services than those in urban areas.<sup>10</sup>

The 1999 follow-up survey for older women focused on measuring changes in physical and mental health, and the use of and satisfaction with health care services. Psychological characteristics such as optimism and health-related hardiness were also measured with the intent of exploring their association with health outcomes in older women.<sup>11</sup> The effect of falls on the future health of women in this age group will be examined as the study progresses, and the use of medication will be monitored. Community factors such as neighbourhood satisfaction, social support, and social participation will also be analysed in terms of their relationship with both physical and mental health outcomes in this generation.

### **SUB-STUDIES**

During the first five years of the project the researchers have, through a series of nested studies, been able to explore selected issues in more depth. Subjects explored to date include: the role of psychological stress and coping in the aetiology of disordered eating; experiences of women seeking help for psychological distress; contraceptive choice among young women; the behaviour of drivers and motor vehicle accidents among the young and mid-age cohorts; iron deficiency and tiredness; use of and satisfaction with health care services; legal protection in the prevention of domestic violence; the health of older widows; and the relationship between social support, health status and the use of health care services in older women. Several publications have arisen from these sub-studies, full details of which can be found on the WHA web page <http://u2.newcastle.edu.au/wha>.

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## IMPROVING THE HEALTH AND LIFE CHANCES OF WOMEN IN DISADVANTAGED COMMUNITIES

**Elizabeth Harris and Elizabeth Comino**  
*Centre for Health Equity Training Research and Evaluation*

**Lis Young and Angela Berthelson**  
*Macarthur Health Outcomes Unit  
 South Western Sydney Area Health Service*

Health and opportunities for health are not equally distributed in our community; for most measures of disease the least advantaged have almost a doubling of risk compared to the most advantaged. While the health differentials between women are often narrower than between men,<sup>1</sup> when examining mortality and morbidity by any measure of social class (such as education, employment status, or place of residence) it is the similarities between men and women within each socio-economic group that is more striking than the differences between genders.<sup>2</sup>

There are socially-determined differences in the life experiences and circumstances between men and women: women are more likely than men to have lower incomes, have left school early, head sole parent families and be in marginal employment.<sup>3</sup> There are broad social and

economic forces that have profound influences on the health of those who are most disadvantaged that are independent of their gender. Those interested in women's health therefore need to be concerned with the significant differences in health and opportunities for health between groups of women along the social gradient. This article describes studies that show that where people live has a strong and independent influence in their health outcomes.<sup>4,5</sup> In NSW there is growing interest in understanding how government can strengthen disadvantaged communities and this article suggests ways of achieving this.

### PLACE OF RESIDENCE AND HEALTH

The Renew and Paisley Study of cardiovascular risk factors and mortality, which included approximately 7,000 men and 8,000 women, found that individually-assigned (for example: personal income, employment status) and area-based (for example: median income for an area, unemployment rates) socio-economic indicators were independently associated with several important health outcomes.<sup>6</sup> Put simply, poor people living in poor areas had worse health outcomes than poor people living in wealthy areas. The authors concluded that action aimed

**TABLE 1**

#### SELF-REPORTED HEALTH STATUS BY SOCIO-ECONOMIC DISADVANTAGE OF AREA

Odds ratio adjusted for age, family income, employment status and other socio-economic factors, Australians aged 25–64 years, 1989–90. The 1st Quintile represents the least disadvantaged and the 5th Quintile the most disadvantaged areas.

Health Status Indicator/ Socioeconomic Area for Women	Age	Odds Ratio Adjusted for (and) Income	(and) Employment Status	(and) Risk Factors	(and) Other Factors <sup>(a)</sup>
Fair/Poor Health					
1st and 2nd Quintile	1.00	1.00	1.00	1.00	1.00
3rd and 4th Quintile	1.43***	1.29***	1.29***	1.22***	1.20**
5th Quintile	1.64***	1.44***	1.43***	1.36***	1.27***

Adapted from Mathers.<sup>1</sup>

(a) Other socio-economic factors: education, metropolitan/non-metropolitan location, country of birth, period of residence, language spoken (refer to Appendix B in Mathers for detail)

\* p <0.05, \*\*p <0.01, \*\*\*p<0.001