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Title page

Health across generations: findings from the Australian Longitudinal Study on Women's Health

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Running head: HEALTH ACROSS GENERATIONS

HEALTH ACROSS GENERATIONS: FINDINGS FROM THE AUSTRALIAN LONGITUDINAL STUDY ON WOMEN'S HEALTH

Abstract

Interpretation of changes in health and health care utilisation patterns across the lifespan depends on understanding of the effects of age, period and cohort. The purpose of this paper is to illustrate differences between three generations of women in demographic factors, health risk factors and health status indicators, over a period of 12 years from 1996 to 2008. The paper examines data from the Australian Longitudinal Study on Women's Health, a broadranging project funded by the Australian Government Department of Health and Ageing and involving three age groups of women (born between 1973-78, 1946-51, and 1921-26) who were first surveyed in 1996 and will be followed-up every three years until at least 2015. Patterns in selected demographic factors (marital status and level of educational qualification), health risk factors (smoking, alcohol consumption, physical activity, body mass index) and health status indicators (asthma, hypertension, diabetes and depression; physical functioning and mental health scores from the SF-36) were examined in order to illustrate examples of biological age, generational differences or period effects that affect all age groups and generations simultaneously. The results can be used to inform the development of responsive and effective models for both prevention and management of chronic disease, including health and aged care systems which will meet the needs of different generations of women across their lifespan.

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

There are numerous challenges in studies that follow individuals over the lifespan. These include the logistics of recruiting and maintaining contact with participants and disentangling age, period and cohort effects when interpreting the findings (Yang, 2008). If a single cohort (e.g. children born in a specific time and place) is followed over time the results can really only be generalised to others born at about the same time and in similar circumstances. It will take many years before data are obtained about their adult lives, and by that time lessons about childhood factors that affect later life may no longer be relevant, due to changes in social and environmental conditions (Mishra & Lawler, 2009). This paper illustrates differences between three generations of women in demographic factors, health risk factors and health status indicators, over a period of 12 years from 1996 to 2008. It examines whether the trends were due to age, period or cohort effects and considers the implications for the provision of health services into the future.

Clarifying age, period and cohort effects (see Box 1) in longitudinal cohort studies is difficult because all three are time-related. It is however necessary to attempt to clarify these effects in order to fully understand temporal trends and predict future trends (Rothman & Greenland, 1998). A distinction between these effects may help to identify and understand underlying social and environmental factors that may be able to be changed by better treatment (Yang, 2008), for example modifications in health systems design or nursing practices.

Cohort effects have been demonstrated for the substantial declines in morbidity and mortality due to heart disease, stroke, lung cancer and breast cancer in the US since the late 1960s (Yang, 2008). However, while cohort effects (including improvements in hygiene,

nutrition and medicine over time) have contributed to extended lifespan, for those already in the latter stages of life it is most likely the period effects (such as improved medical treatments for chronic and acute illnesses in later life) that contribute most significantly to declines in morbidity and mortality in older people (Jeune & Christensen, 2005). The US Health and Retirement Study has found that newer cohorts of people aged 51–56 years are in relatively poorer health than older cohorts, reporting more difficulty with daily tasks, more pain, more chronic conditions, more psychiatric problems, and higher use of alcohol (Soldo, Mitchell, Tfaily, & McCabe, 2006). Similar findings have also been reported for people in the United Kingdom (Banks, Marmot, Oldfield, & Smith, 2006) and have significant implications for planning and delivery of future health services.

Correct interpretation of changes in health and health care utilisation patterns across the lifespan depends on an accurate understanding of these age, cohort and period effects. In the Australian Longitudinal Study on Women's Health (ALSWH) we have attempted to overcome some of the limitations of other longitudinal studies, by simultaneously studying three cohorts of adult women, defined by birth years, as they age during the same calendar period. The purpose of this paper is to illustrate differences between these groups of women in trends in selected demographic factors, health risk factors and health status indicators, over more than a decade, starting in 1996. These indicators were selected because they are important for health across the lifespan and were measured by the ALSWH across all cohorts at three or more times. The specific aims were to determine whether these trends were due to age, period or cohort effects and to use this information to consider the implications for the provision of health services into the future.

Methods

Background

The ALSWH is a broad-ranging project which examines relationships between many biological, physical, social, lifestyle and health risk factors and women's physical health, emotional well-being, and use of and satisfaction with health services. It is funded by the Australian Government Department of Health and Ageing (DoHA) and involves three age groups of women who were first surveyed in 1996 and will be followed-up for at least 20 years. In 1996 women born in 1973-78 were aged 18-23 years, those born in 1946-51 were aged 45-50 years, and those born in 1921-26 were aged 70-75 years. Women were selected from the Australian national health insurance database (Medicare), which includes all citizens and permanent residents, as well as refugees and immigrants. Women from rural and remote areas were oversampled to allow adequate numbers for statistical comparisons to be made. Women from non-English speaking backgrounds who were included in the sample were offered the opportunity to complete the survey over the phone with an interpreter in the language of their choice. Further details of the recruitment methods and response rates have been described elsewhere (Brown, et al., 1998; Lee, et al., 2005; Young, Powers, & Bell, 2006) and details of the study can be found at www.alswh.org.au.

Measures

All data were collected by omnibus style mailed surveys which were sent to the three cohorts every three years after the second surveys (see Table 1). While the ALSWH surveys capture many aspects of women's lives, for the purposes of this paper we present only selected demographic factors, health risk factors and health status indicators, in order to illustrate changes in the three cohorts of women over time.

Demographic factors. The demographic factors presented in this paper are marital status and level of educational qualification. Marital status was measured using a categorical variable (never married, married, living with a partner of the same sex, living with a partner of the opposite sex, separated, divorced, widowed) and grouped into two categories: 1)

married/partnered (including live-in relationships), and 2) never

married/divorced/separated/widowed. Level of educational qualification was also measured using a categorical variable (no formal qualifications, year 10 or equivalent, year 12 or equivalent, trade/apprenticeship, certificate/diploma, university degree, higher university degree). This question was asked at every survey for the 1973-78 cohort, many of whom were still gaining qualifications when the study started. The question about education was asked at Survey 1 only for the 1946-51 and 1921-26 cohorts. For all cohorts, education was re-categorised dichotomously as 1) having achieved a post-high school qualification, or 2) not having achieved a post-high school qualification.

Health risk factors. In the ALSWH surveys smoking was assessed using several questions related to history, prevalence and frequency. For this paper, smoking was categorized into two groups: 1) current smoker, or 2) ex-smoker/non-smoker. Data on smoking behaviour were not collected for the cohort born in 1921-26 from Survey 3 onwards.

Similarly, in the ALSWH surveys alcohol consumption was assessed using questions about quantity and frequency of standard drinks consumed. For this paper, alcohol consumption was grouped into two categories: 1) risky level of drinking, or 2) low risk drinking. Women who did not drink were included in the low risk group and may have included both lifetime abstainers and ex-drinkers. Questions about alcohol consumption were not included for the cohort born in 1946-51 at Survey 3 or for the cohort born in 1921-26 from Survey 4 onwards.

Physical activity was measured using several questions about the amount and frequency of different types of physical activity, and the amount of time spent in activities such as sitting. Women in each cohort were grouped into four physical activity categories based on estimated units of energy expenditure (MET.mins) (Brown, Burton, Marshall, & Miller, 2008). The National Physical Activity Guidelines suggest that, for health benefit, all Australians should accumulate at least 30 minutes of at least moderate intensity physical activity on most, if not all, days of the week (DoHA, 1999). A cut-off of 600 MET.mins per week (e.g. 30 minutes x 5 sessions x 4 METs) was used to define whether women were accumulating adequate physical activity for health benefit and physical activity was categorised into two groups: 1) adequate physical activity according to guidelines, and 2) inadequate physical activity. Physical activity data were not collected in this way for any cohort in Survey 1 or for the cohort born in 1946-51 for Survey 2.

The women were asked to report their weight in kilograms (kg) and height in centimetres in all surveys. The data were used to derive body mass index (BMI): weight in kg divided by the square of height in metres. Women were classified as overweight or obese according to World Health Organisation (WHO) guidelines (WHO, 1995) whereby scores of 25 or over are considered overweight and scores of 30 or over are considered obese.

Health status indicators. At each survey, women were asked about diagnosed medical conditions. Four common conditions were examined in this paper: asthma, hypertension, diabetes and depression. These conditions were selected because they are common chronic conditions that exhibit different patterns across the three cohorts. In earlier surveys the question was framed as "Have you ever been told by a doctor that you have …?" However, from Survey 3 onwards, the question was revised to: "In the past three years have you been diagnosed or treated for…?" Hypertension did not include gestational hypertension and diabetes did not include gestational diabetes. Data for depression were not available at Survey 1 (1996).

Prevalence calculations assumed that asthma, hypertension and diabetes persisted so that once the diagnosis had been made the person was regarded as having the condition even if the signs and symptoms were controlled by preventive measures and treatment. Therefore if a woman indicated that she had the condition at a survey it was assumed that she also had the condition at later surveys. However, depression was assumed to be able to resolve and was therefore able to fluctuate over surveys. Prevalence was calculated as the number of women who indicated that they had been told by a doctor that they had each condition (the numerator), divided by the total number of women who provided any information about the condition (the denominator) at that particular survey.

Each survey included the Australian version of the SF-36 Health Survey (Version 1) (McCallum, 1995), which assesses general physical and psychological health as well as wellbeing over the last four weeks. For this paper the physical functioning (PF) and mental health (MH) subscales were selected to represent women's health status for these perspectives. Each subscale has a score range of 0 to 100 (Ware, Snow, Kosinski, & Gandek, 1993).

Statistical analysis

Data were weighted by area of residence to allow for the deliberate oversampling of women from rural and remote areas. Descriptive statistics were used to present the demographic factors, health risk factors and health status indicators for the three cohorts of women across the surveys. To disentangle the age, period and cohort effects, an exploratory analysis was conducted with results presented in tables and graphs (Robertson & Boyle, 1998). The figures show age at each survey on the horizontal axis. The vertical axis shows mean scores for BMI (Figure 1), the percentage of women in each cohort who reported being diagnosed with each condition at each survey (prevalence of asthma, hypertension, diabetes and depression, Figure 2) and the mean scores for PF and MH subscale scores (Figure 3) all with 95% confidence limits.

Results

Cohort retention and attrition

The dates of each survey and numbers of respondents are shown in Table 1. The 1946-51 cohort have the highest retention, while attrition among the 1973-78 cohort has occurred largely as a result of loss of contact, as women in this age group tend to move often. Death was the major cause of non-participation in the 1921-26 cohort.

Demographic factors

Demographic characteristics and health risk factors of women who responded at each survey are shown in Table 2. Over the study period the percentage of women in the 1973-78 cohort who were partnered increased, while the percentage of women who were partnered in the 1946-51 cohort decreased slightly. The dramatic decrease in partnered status among the 1921-26 cohort reflects the number of women who had been widowed. The percentage of post-high school qualifications among the 1973-78 cohort increased over time, with 79% having a post-high school qualification by the time they were aged 28-33 years. In comparison, only 39% of the 1946-51 cohort had post-high school qualifications and this figure was lower still (19%) for the 1921-26 cohort.

Health risk factors

Across all three cohorts the percentage of women who smoked decreased over time. The 1973-78 cohort had the highest proportion of smokers, followed by the 1946-51 cohort, with a very low rate of smoking in the 1921-26 cohort. Risky drinking was low for all three cohorts, with percentages remaining fairly stable over time. Of the three cohorts, only those born in 1946-51 showed an improvement in the amount of physical activity being undertaken. The proportion of women who did inadequate physical activity increased among both the 1973-78 and 1921-26 cohorts.

The proportion of women who were overweight or obese increased by 19% over 10 years for the 1973-78 cohort, and by more than 14% over 11 years for the 1946-51 cohort.

However, while there was a consistent increase in overweight and obesity in the 1973-78 cohort, for the 1946-51 cohort the increase appeared to plateau, with 58% of women overweight or obese in 2004 and 59% overweight or obese in 2007. In contrast, the 1921-26 cohort showed only small fluctuations in overweight and obesity over time. Trajectories in BMI that further illustrate these findings can be seen in Figure 1. Despite changes in overweight and obesity over time, it is important to note that 39% of the 1973-78 cohort, 59% of the 1946-51 cohort and 46% of the 1921-26 cohort were overweight or obese at the most recent survey.

Health status indicators

The prevalence of asthma, hypertension, diabetes and depression by age in the three cohorts is shown in Figure 2. In 1996 the lifetime prevalence of asthma was highest among women born 1973-78 and lowest among women born 1921-26 (i.e., this is an example of a cohort effect). Since then the prevalence of asthma increased over time, and remained highest in the younger cohort. Results for hypertension and diabetes show age effects rather than cohort effects, that is, increasing lifetime prevalence with age is readily apparent, especially in the 1946-51 and 1921-26 cohorts for hypertension. The prevalence of depression at each survey increased marginally over time in all three cohorts with the 1973-78 and 1946-51 cohorts showing higher levels of depression than the 1921-26 cohort.

Mean scores (with 95% confidence limits) for the PF and MH subscales are shown in Figure 3, where higher scores reflect better health. As might be expected, women in the 1973-78 cohort had the best physical functioning which remained steady over time. While women in the 1946-51 cohort showed a steady decrease in physical function as they aged from 45-50 to 56-61 years, the older women experienced a sharp decline in physical function as they aged from 70-75 to 82-87 years. In contrast women in the 1973-78 cohort reported the poorest mental health, followed by those in the 1946-51 cohort, while women in the oldest

cohort had the best mental health. For the two younger cohorts mental health improved over time (and with age), but for the 1921-26 cohort mental health declined as women aged from 79-84 to 82-87 years.

Discussion

The ALSWH covers three generations of women and this allowed us to illustrate the effects of biological age, calendar time or 'period' and generational or cohort differences over 12 years from 1996 to 2008, and consider the implications for health services.

Demographic factors

The pattern of gaining and then losing partners over time was predominantly an example of an age effect, but there was also a cohort effect, as the younger women moved into stable partnerships at a later age than the older women would have done. By the age of 22-27, fewer than half the women in the 1973-78 cohort had a partner. In 1948 more than 60% of Australian women married before the age of 25 but this figure is now much lower (less than 40% in 2001) due to a range of factors including increased participation in post-high school education and the labour force and changing priorities among young women (Australian Bureau of Statistics [ABS], 1951; ABS, 2001). The social and economic resource implications of young women remaining single for longer, and having children later in life will be considerable, with potentially increasing pressures on obstetric, midwife and other services for older mothers, conception advice and infertility services, and access to health services for families where parents work full-time (Quimby, 1994).

The need for health services to provide additional support for unpartnered older women is also likely to gain increased urgency in the foreseeable future, as the numbers of widowed older women in the population continues to increase. As women with partners generally have greater social and economic resources than unpartnered women, marital status is likely to impact on women's use of health services unless the health and welfare systems provide additional support. There is evidence that innovative models of care, such as multidisciplinary team targeted home visits for elderly people, particularly those living alone, can improve access and quality of care (Beck, Arizmendi, Purnell, Fultz, & Callahan, 2009).

Differences between the cohorts in education were also apparent, with the younger women being much more likely to have post-high school qualifications. However, these differences in level of education between the cohorts are unlikely to change much as these women become older. This pattern demonstrates a period effect with older women having low levels of education compared to the high levels evident among the younger cohort. The impact on the health system is reflected in the different expectations and information requirements of people of different ages, and consequently the wider range of services demanded (Andreassen, et al., 2007).

Health risk factors

The differences in smoking prevalence suggest strong cohort effects. Our previous work has indicated that marriage and pregnancy are strongly associated with quitting smoking in the 1973-78 cohort (McDermott, Dobson & Owen, 2009). The proportion of smokers in the 1946-51 cohort also declined over the study period, and few women in the 1921-26 cohort continued to smoke. In light of this finding, if the trend towards quitting continues in the younger cohort, levels of smoking are likely to be similar or lower in the 1973-78 cohort when they are 45-50 years old, to those seen in the 1946-51 cohort at the same age. It is important however, to consider the impact of smoking on morbidity and mortality among the oldest women, and the observation that smokers were more likely to drop out of the study than non-smokers in all three cohorts (Young, Powers & Bell, 2006). This means that population prevalence of smoking may have been underestimated. The health effects of smoking are long-term, not just for risk of lung cancer but also for damage to the

respiratory and vascular systems (Erhardt, 2009). Thus the impact of smoking is likely to affect the need for health care of chronic conditions for decades to come.

Patterns in the prevalence of inadequate physical activity and overweight and obesity showed different trajectories for women in the three cohorts. Women in the oldest and youngest cohorts did less physical activity over time, while those in the 1946-51 cohort did more. At the same time, there was a sharp increase in the prevalence of overweight and obesity in both the 1973-78 and the 1946-51 cohorts from 1996 to 2005/2006. In the last survey period this increase may have slowed in the 1946-51 cohort, possibly related to increasing levels of physical activity. These findings mirror the general pattern in Australia, where the prevalence of overweight and obesity has been increasing over at least the past 20-30 years. Over 17% of females aged 18 years and over have been found to be obese with a further 25% classified as overweight but not obese (Australian Institute of Health and Welfare [AIHW], 2008). Along with tobacco and alcohol consumption, the halting and reversing of the rise in overweight and obesity is one of the major targets of the Preventative Health Taskforce accepted by the Australian Government for action (Australian Government Preventative Health Taskforce, 2009). The implications for health services of the growing levels of overweight and obesity and decreasing physical activity, particularly in younger women are considerable. The age-specific prevalence of chronic conditions is likely to be higher than for older generations (Li, et al., 2006) resulting in greater burden for the health system. It is essential that health services encourage the maintenance of healthy weight for all women, but especially young women who are vulnerable to increased weight at transition times such as moving in with a partner or getting married, starting work, or having children (Bell & Lee, 2005).

Health status indicators

The lowest prevalence of asthma was reported by women in the oldest cohort and the highest among the youngest cohort (i.e., cohort effects), but prevalence increased in all cohorts during the study period (i.e., period effects). There is evidence that asthma may be under-diagnosed in older people (Braman & Hanania, 2007). Nevertheless age-period-cohort modelling has showed that some of the increase in asthma deaths in the mid 1960s and all of the rise in the late 1980s was the result of birth cohort effects (Taylor, Comino & Bauman, 1997). An estimated 10.3% of the Australian population had asthma in 2004-5, down from 11.6% in 2001 and overall females had a higher prevalence than males (AIHW, 2008). Asthma has recently decreased among children and young adults, though not in people aged 35 years and over (AIHW, 2008) and there is evidence that improvement in recognition and treatment has promoted a decrease in mortality (Comino & Henry, 2001). The implication of this complex pattern is that control of asthma may be improving due to both improvements in health care and changes in the environmental conditions that influence the aetiology of the condition.

Hypertension showed increasing prevalence with age, with the trajectory for women in the 1921-26 cohort following on from the trajectory for women in the 1946-51 cohort. However, the trajectory of the youngest cohort did not indicate an increase in prevalence, consistent with the finding that both prevalence of hypertension and average blood pressure have decreased appreciably since 1980 among urban populations in Australia aged 25-64 years (AIHW, 2008). In contrast, the prevalence of diabetes suggests a steady increase in prevalence with age. In light of the trends for BMI and overweight and obesity, it is likely that there could also be a cohort effect with higher prevalence of diabetes in the younger cohort when they are in their forties, than in women from the 1946-51 cohort at the start of the study in 1996. With increasing prevalence of many weight-related chronic diseases there will be a need to plan for managing larger numbers of patients cost effectively across the life span.

The trends for depression are consistent with other studies, showing that mental illnesses including depression account for a large proportion of overall disease burden for all age groups up to middle age (AIHW, 2008). The 'healthy survivor' effect may account for the lower depression among older women as women with poor mental health are more likely to drop out of the study as they get older due to increasing disability or earlier death. However, there is other evidence that women's psychological well-being is well maintained into old age (Lee, 1999). Other age-related illnesses may complicate the recognition and treatment of depression, which is more commonly experienced by women than men (Krishnan, 2002). Issues stemming from such co-morbidity, particularly in women, will prove not only an additional burden on existing health systems but will necessitate new models of accessing care, treating patients and training health care providers (Jeste, 1999; Laidlaw & Pachana, in press). The short-term implications of our findings are that younger women may exhibit co-morbid physical and mental health problems earlier in life than previous generations and these will likely require more management by health service providers with skills in more complex care.

The overall results for physical functioning showed a clear effect of decline with age from the initially high level of physical health in the youngest women, as expected. However, this was balanced to some extent by better mental health with increasing age; which may reflect women's changing expectations of their own health as they age. These age-specific differences emphasise the growing needs for health care providers with special expertise in the mental health of young people, and in the care of the elderly as this group becomes a higher percentage of users of health services.

Strengths and limitations

The strengths of this study include the use of a large, geographically diverse sample of community-dwelling women in three distinct age cohorts, and the availability of 12 years of longitudinal data. The findings are based on a national randomly selected sample of Australian women, rather than a regional or occupational group so participants come from the widest possible range of geographical, socioeconomic, and personal circumstances.

It is important to interpret the study findings with consideration to the representativeness of the cohorts. Details of the attrition of the cohorts over time have been described elsewhere showing that non-respondents were more likely to have been born in a non-English-speaking country and to be a current smoker, and less likely to have completed high school or a post-high school qualification. Non-respondents from the 1973-78 and 1946-51 cohorts were more likely to be separated, divorced or widowed and report difficulty managing on their available income (Young, Powers, & Bell, 2006). A number of minority groups with special needs were under represented in the original sample and/or lost to attrition over time including Aboriginal/Torres Strait Islander women, migrants who do not speak, read, or write English well; women with disabilities, and those living in institutions (Lee, et al., 2005). Non-respondents from the 1946-51 and 1921-26 cohorts were more likely to be in poorer physical and mental health than respondents (Young, Powers, & Bell, 2006).

Further limitations are due to the use of self-report questionnaires and administrative health databases to obtain the data. It is therefore not possible to confirm diagnoses or other health indicators from health care provider records.

Directions for future research

This study shows the value of using longitudinal cohort data to examine age, period and cohort effects because it is often not valid to extrapolate from past experience to future expectations. It demonstrates that data of this type are essential for planning health services into the future and to this end, future research effort is needed in continuing to support existing cohorts and establish new ones. For example, the youngest women in the ALSWH are now in their early to mid-30s. The establishment of a new cohort of young women would provide essential information about the health service needs of women into the future. Women of Generation Y have grown up with mobile phones and the internet. They have experienced wider health education and have more health information available to them than previous generations but have also experienced a different environment of health risk behaviours and sedentary leisure activities in a different social environment where there are fewer traditional roles and more varied family structures. For future policy development it will be important to gain early data on their knowledge, attitudes and behaviour in relation to their health and health service use.

Conclusions

In conclusion, it is evident from the results presented here that cohort studies such as the ALSWH, which follow different cohorts across the same period of time, can be used to demonstrate age, cohort and period effects in demographic factors, health risk factors and health status indicators. These factors have different implications for the development of responsive and effective models for both prevention and management of chronic disease. Understanding the consequences of these differences is important for the planning and development of health and aged care systems to meet the needs of different generations of women across their lifespan.

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Figure captions

Figure 1. Mean BMI by age in the three cohorts

Figure 2. Prevalence of asthma, hypertension, diabetes and depression (with 95% confidence

limits) by age in the three cohorts

Figure 3. Mean physical function (PF) and mental health (MH) index scores (with 95%

confidence limits) from the SF36 by age in the three cohorts

Box 1

Definition of age, period and cohort effects.

Age effects: Patterns of morbidity and mortality that are due to the biological process of ageing. These effects are reasonably consistent across nations and historical time.

Period effects: Patterns related to the time at which events occur that influence all age groups at about the same time. They may include the impact of historical events and environmental factors such as world wars, economic conditions, pandemics of infectious diseases or new health interventions that influence the health of all members of society at a particular time.

Cohort or generation effects: Represent patterns of morbidity and mortality across groups of individuals born in the same year or years. Cohort effects usually suggest environmental causes possibly occurring early in life and producing later health effects.

Sources: Merrill, 2007; Taylor, Comino & Bauman, 1997; Yang, 2008

Table 1

Numbers and age ranges for women responding to each survey (as at November 2009)

Year	1973-78 cohort			1946-51 cohort			1921-26 cohort		
	Survey	Number of respond- ents	Age range	Survey	Number of respond- ents	Age range	Survey	Number of respond- ents	Age range
1996	S 1	14247	18-23	S 1	13715	45-50	S 1	12432	70-75
1997									
1998				S2	12338	47-52			
1999							S 2	10434	73-78
2000	S 2	9688	22-27						
2001				S 3	11226	50-55			
2002							S 3	8647	76-81
2003	S 3	9081	25-30						
2004				S 4	10905	53-58			
2005							S 4	7158	79-84
2006	S 4	9145	28-33						
2007				S5	10638	56-61			
2008							S5	5561	82-87
2009	S5	in progress	31-36						

Table 2

Demographic characteristics and health risk factors of women in each cohort who responded at each survey (numbers of participants are shown in Table 1)

Characteristic	Cohort	S1	S2	S 3	S4	S 5
Married/partnered (%)	1973-78	19.2	44.1	60.8	72.8	X
	1946-51	83.0	82.3	81.1	79.6	78.0
	1921-26	58.8	52.6	45.6	38.1	30.3
Post-high school	1973-78	31.9	70.8	76.2	79.2	Х
education (%)	1946-51	39.2	-	-	-	-
	1921-26	18.9	-	-	-	-
Current smoker (%)	1973-78	27.2	25.5	21.5	17.1	Х
	1946-51	14.4	14.6	12.9	12.5	10.2
	1921-26	5.2	3.7	-	-	-
Risky level of alcohol	1973-78	4.9	3.2	3.3	3.4	X
consumption (%)	1946-51	5.0	5.5	-	6.7	6.5
	1921-26	3.6	4.0	3.0	-	-
Inadequate physical	1973-78	-	44.2	44.7	49.9	X
activity (%)	1946-51	-	-	53.9	44.2	40.6
	1921-26	-	57.8	61.4	66.0	74.8
Overweight or obese	1973-78	20.1	28.3	33.8	39.0	X
(%)	1946-51	44.2	48.9	53.6	58.0	58.8
	1921-26	46.1	47.3	49.4	47.2	46.1

Row percentages are weighted by area of residence

x Data not yet complete for Survey 5 of 1973-78 cohort

- Not asked at that survey





