



Australian Longitudinal Study  
on Women's Health

# Technical Report #41

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## 1. EXECUTIVE SUMMARY

This report covers the period from December 2017 to November 2018. The purpose of the Australian Longitudinal Study on Women's Health (ALSWH) technical report is to document the annual operational aspects of the ALSWH, as well as the progress and outcomes of the preceding year. Content includes data collection procedures and materials; the outcomes of data collection procedures in terms of retention and attrition (including that due to deaths) and cohort maintenance strategies used to mitigate attrition; reports on data linkage and archiving activities; reports on methodological issues that have arisen and the resolutions that were applied; the executive summary of the annual major report; summaries of dissemination activities including publications, conference presentations and media; and information about collaborations and staffing. This executive summary includes the main findings of each section of the report.

### ***Introduction***

This section introduces the ALSWH by briefly describing the four cohorts (born 1921-26, 1946-51, 1973-78 and 1989-95) and the aims of the study. The women who comprise the cohorts regularly complete mailed or online surveys that ask about diverse aspects of health, wellbeing, life experiences and demographics. The ALSWH has met all of the obligations and deliverables for the period December 2017 – November 2018 contained in the relevant contracts with the Department of Health.

### ***Conduct of surveys***

During this period, surveys have been conducted as follows:

- *1989-95 cohort:* The fifth survey was completed. The survey began on 29 June 2017 and closed on 9<sup>th</sup> April 2018, with 8,495 surveys received. Planning for the Pilot of Survey 6 has begun.
- *1973-78 cohort:* The Pilot of Survey 8 was closed in March 2018, with 45 full surveys completed, and two partially completed. The main survey began on 4 June 2018, and at 24 October, 5,490 surveys had been completed, with another 252 partially completed.
- *1946-51 cohort:* Preparation of the Pilot of Survey 9 has begun.
- *1921-26 cohort:* Women in this cohort receive a survey every six months. The six-monthly follow-up (6MF) surveys are conducted on a rolling basis, so that women receive a survey six months after they have completed their previous survey. Thus, both the numerator and denominator of the response rate are dynamic. The fourteenth round of survey distribution started in May 2018.

### ***Maintenance of cohorts***

Retention of participants in each cohort has continued to remain high, at over 80% for the older cohorts and over 55% for the younger cohorts. Comparison with recent Australian Censuses shows that the ALSWH cohorts also continue to be broadly representative of the general population of adult Australian women.

### ***Data linkage***

Data linkage has continued to be an important component of the Study. Twenty-five administrative datasets are linked with survey data and 115 projects are currently approved to use the linked data. Analyses using linked data have been included in over 60 publications (journal articles and reports).

### ***Archiving***

ALSWH data are routinely archived with the Australian Data Archive (ADA). In 2018, data from Survey 8 of the 1946-51 cohort, Survey 5 of the 1989-95 cohort, and the six-month follow-up surveys of the 1921-26 cohort will be archived with the ADA.

### ***Methodological issues***

A number of important methodological issues have been examined during 2018, including how to prepare linked administrative datasets (hospital and Aged Care) for use in analyses, and how to use the Rosenberg Self Esteem Scale. Measures taken to keep data secure have also been reviewed.

### ***Major report 2018***

The ALSWH major report for 2018 examined women's informal caregiving across the lifespan. A summary is included here.

### ***Dissemination of study findings***

Since December 2017, a total of 51 papers have been published or accepted for publication in national and international scientific journals, and over 30 presentations have been made to scientific and professional audiences both in Australia and internationally. During the year, the Study website has been maintained for compliance with accessibility guidelines, and new factsheets have been made available on the resources page. Social media continued to be used as a communication tool, particularly with the youngest cohort and the general public.

### ***Collaborative research activities***

In 2018, data access has been approved for over fifty new research projects conducted by researchers at institutions across Australia and overseas. Progress reports have been provided for existing projects investigating the following topics:

- Chronic conditions (such as arthritis, cardiovascular conditions, cancer and diabetes)
- Health service use and systems
- Mental health
- Ageing
- Reproductive health
- Methodological issues
- Tobacco, alcohol and other drugs
- Medications
- Weight, nutrition and physical activity
- Health in rural and remote areas
- Social factors in health and well-being
- Caring
- Abuse

Thirty-three postgraduate students are currently working on aspects of the project.

### ***Staff***

ALSWH staff are located at the University of Newcastle and the University of Queensland. To date, during 2018 over thirty individuals have been employed by ALSWH in casual, part-time, and fulltime positions. All staff are employed on contracts with their respective universities and none are in tenured (ongoing) positions. Positions are directly tied to the funding provided by the Department of Health.

## 2. INTRODUCTION

The Australian Longitudinal Study on Women's Health (ALSWH) is a longitudinal population-based survey funded by the Australian Government Department of Health. The project began in 1996 and involves four large, nationally representative cohorts of Australian women representing four generations:

- The 1989-95 cohort, aged 18 to 23 when first recruited in 2012/2013 (N = 17,015) and now aged 23 to 29 in 2018
- The 1973-78 cohort, aged 18 to 23 years when first recruited in 1996 (N=14,247) and now aged 40 to 45 years in 2018
- The 1946-51 cohort, aged 45 to 50 years in 1996 (N=13,716), now aged 67 to 72 years in 2018
- The 1921-26 cohort, aged 70 to 75 years in 1996 (N=12,432), now aged 92 to 97 years in 2018

ALSWH takes a comprehensive view of all aspects of women's health and aims to provide scientifically valid information, based on current, accurate data that are relevant to the development of health policy and practice in women's health. The surveys cover demographic variables, health behaviours, diagnoses, symptoms, general measures of health, such as the Health Survey 36 Short Form (SF-36), and access to and use of a range of health services. Survey data can be linked to administrative data on doctor visits, pharmaceutical prescriptions, hospital admissions, aged care services, cancer registries and death records.

Women participating in the Study have now been surveyed repeatedly over the past 22 years, providing a large amount of data on their lifestyles, use of health services, and health outcomes. Continuing participation is encouraged through regular newsletters, the Study website and social media, and opportunities to participate in focused sub-studies and other activities.

This technical report (#41) has been provided by the University of Queensland and the University of Newcastle as agreed in contracts between the Australian Government Department of Health and the two universities. The report is presented in sections, with information on data collection and related activities provided first, followed by details of how ALSWH data have been used during the year.

This report includes the following items, as required in Contractual agreements with the Department of Health:

- Sources and development of instruments used for data collection are included in Section 3: Conduct of Surveys.
- Response rates are provided in Section 4: Maintenance of cohorts.
- Methodological issues relating to the surveys and data collection, as well as work relating to reliability, validity, and statistical issues for all cohorts are included in Section 7: Methodological Issues.

- Key new research findings for 2018 and details of dissemination activities, such as publications in scientific journals and presentations at conferences during the year are found in Section 8: Major Reports, and Section 9: Dissemination of Study Findings.
- Project materials and related items produced during 2018 are provided in a separate appendix.

All objectives, outcomes, and timeframes were met as required:

- Survey 5 of the 1989-95 cohort was completed, and the Pilot of Survey 6 is expected to be underway before the end of the year.
- The Pilot of Survey 8 of the 1973-78 cohort was completed, and the main survey began in June.
- Planning for Survey 9 of the 1946-51 cohort commenced.
- The fourteenth wave of the six-monthly follow-up surveys of the 1921-26 cohort commenced in May.
- A total of 51 new research projects were given approval to use ALSWH data, and results from previously approved projects were published in 51 peer reviewed scientific journal articles and used in more than 30 conference presentations. Projects include analyses that:
  - clarify the cause and effect relationship between women's health and a range of biological, psychological, social and lifestyle factors,
  - assess the effects of changes in policy and practice,
  - explore the factors that influence health among women who are broadly representative of the entire Australian population,
  - investigate all aspects of health throughout women's lifespan,
  - provide an evidence base of the development and evaluation of health policy and practice.
- An Annual Report for 2018 and a Major Report (on informal caregiving across the lifespan), were prepared for the Department of Health.
- The Data Linkage Committee oversaw access to linked data for: Medicare Benefits Schedule (MBS)/Pharmaceutical Benefits Scheme (PBS) data, hospital data, aged care data, cancer data, perinatal data and emergency services data.

*Note:* Percentages used in this report may not add up to 100 due to rounding.

### 3. Conduct of surveys

In late 2017 and during 2018, survey activity was recorded for every ALSWH cohort except the 1946-51 cohort. In the 1989-95 cohort, Survey 5 was conducted and finalised. Details of these activities are included in Section 3.1. For the 1973-78 cohort, the pilot of Survey 8 was conducted and finalised and the main survey was planned and launched. These activities are described in Section 3.2. For the 1921-26 cohort, the thirteenth and fourteenth six-monthly surveys were distributed (described in Section 3.3). The fifteenth six monthly survey will be distributed in November 2018.

#### 3.1 1989-95 cohort

Surveys for the 1989-95 cohort continue to be offered via an online survey only. The current software platform supporting the Study's surveys is DatStat Illume.

##### 3.1.1 Main Survey 5

###### Final Response Rate

*Attrition tables and revised response rates*

Planning and development for Survey 5 for the 1989-95 cohort is described in Technical Report #40 (December 2017). The last responses from participants were received on 9th April 2018, with the data collection period closing on the same day.

**Table 3-1 Final response rates for the 1989-95 cohort Survey 5 (N=17,011)**

	<b>Survey 3 (20-25)</b>	<b>Survey 4 (21-26)</b>	<b>Survey 5 (22-27)</b>
<b>Deceased</b>	6	8	13
<b>Frail</b>	1	1	1
<b>Withdrawn</b>	694	1,745	1,943
<b>TOTAL INELIGIBLE</b>	701	1,754	1,957
<b>Did not do survey</b>	3,880	1,849	1,813
<b>No contact</b>	3,470	4,402	4,745
<b>Respondent</b>	8,961	9,007	8,495
<b>TOTAL ELIGIBLE</b>	16,311	15,258	15,053
<b>RESPONSE RATE (%)</b>	54.9%	59.0%	56.4%

## Main Survey 5 Final Reminder Protocol – Documents Sent

Table 3-2 below shows the final distribution of documents to participants over the course of the data collection period.

**Table 3-2 Actual distribution timetable for Survey 5 of the 1989-95 cohort**

Date	Activity	No	Items	Number Sent
29-30 June 2017	Email	1	Email invitation	14,835
24 June 2017	Mail	1	Invitation letter to those without email	293
13 July 2017	SMS	1	SMS reminder	9,419
24 July 2017	Mail	1	Reminder letter	10,067
28 July 2017	Email	2	Reminder email	10,291
14 August 2017	SMS	2	SMS reminder	7,331
21 August – 14 March 2018	Phone Reminder	1	Phone calls	21,182
9 November 2017	SMS	3	SMS reminder prior to prize draw closure.	4,815
8 March 2018	SMS	4	Final SMS reminder	3,933
29 March 2018	Email	3	Final Email reminder	5,664

### 3.2 1973-78 cohort

#### 3.2.1 Pilot Survey 8

##### Finalisation

Planning, development, mailout and data collection of the 1973-78 pilot cohort Survey 8 was previously described in Technical Report #40 (2017). The survey was offered in two formats, online and paper. As is usual for pilot surveys, an evaluation questionnaire was included with both forms of the survey. The online surveys were programmed using the DatStat Illume platform. Paper surveys were printed in house and were entered into the online survey manually. Data collection began on 22<sup>nd</sup> November 2017 and continued until the end of March 2018.

The reminder protocol is shown diagrammatically in Figure 3-1. The numbers and exact dates of reminders and other activity for this survey are detailed in Table 3-3. The reminder protocol could not be followed exactly because some of the reminder dates co-incided with the Christmas shut-down period. Mailout of the paper survey was delayed by two weeks because Australia Post failed to pick-up the consignment when requested.

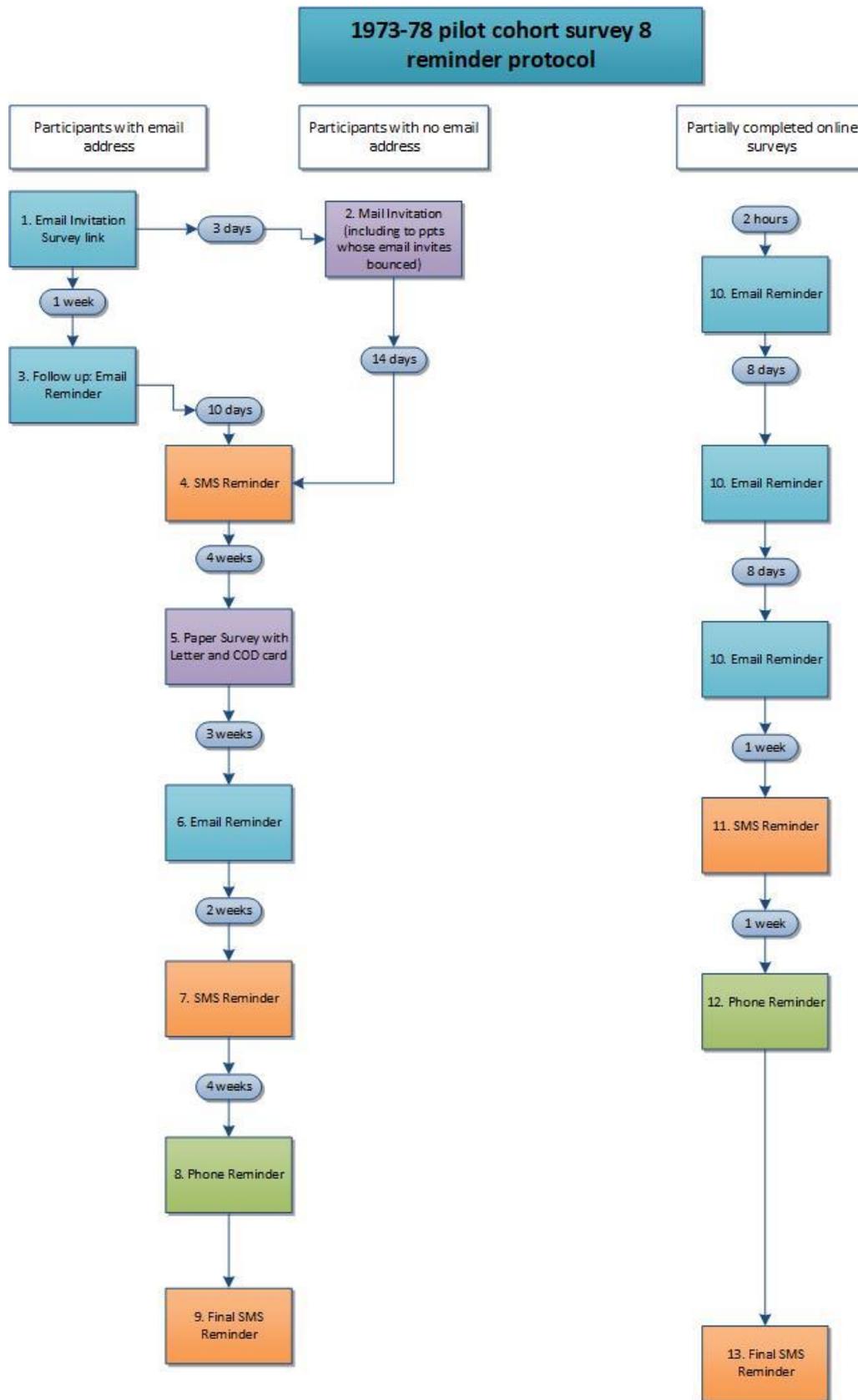


Figure 3-1 1973-78 cohort - reminder protocol for Pilot Survey 8

**Table 3-3 Timetable of activity for the 1973-78 pilot cohort Survey 8**

Date	Activity	Step No.	Items	Non M-PreM	M-PreM
Nov 2017	Email	A1Email	Email invitation to do online survey	161	82
Nov 2017	Mailout	A1Mail	Mail invitation to do online survey	80	28
Nov 2017	Email	A2	Follow-up email reminder to do online survey	126	65
Dec 2017	SMS	A3	Follow-up SMS reminder to do online survey	115	61
Jan 2018	Mailout	A4	Mailed package (letter with online survey link, paper survey, change of details card, reply-paid envelope)	119	75
	Email	A5	Email reminders to do survey	0	0
Feb 2018	SMS	A6	SMS reminders to do survey	78	0
Mar 2018	Phone call	A7	Phone call reminder to do survey	118 attempted calls to 82 ppts	136 attempted calls 53 ppts
Mar 2018	Email	A8	Email survey link following request during phone call	21	7
	SMS	A9	Final SMS reminder to do survey	0	0
<b>PARTIALLY COMPLETED ONLINE SURVEYS</b>					
Nov & Dec 2017	Email	B1,B2 & B3	Automated email reminder to complete online survey	49	16
Dec 2017	SMS	B4	Automated SMS reminder to complete online survey	5	2
Mar 2018	Phone call	B5	Phone call reminder to complete online survey	9 attempted calls to 5 ppts	2 attempted calls to 2 ppts

One hundred and thirty-five participants were included in the telephone reminder, and the reminder was completed for 69% of these. Project assistants attempted to call each participant. Two hundred and fifty-four attempted calls were made. From these, 57 participants were spoken to, one withdrew, one said she did not want to do the survey this time, 55 said that they would do the survey (but only 16 of these completed the survey), one started the survey, one returned the survey too late, and 37 said that they would do the survey but did not.

Seven participants who partially completed their survey were included in a telephone reminder. The phone reminder was completed: 11 attempted calls were made and 7 participants were spoken to. Of these, 4 completed their survey and 3 agreed to finish their survey but did not. Extra email invitations and mailed survey packages were sent to those requesting these through the telephone reminders.

Overall, 329 participants were invited to complete pilot Survey 8 online or on paper. Surveys were accepted until 31st March 2018, by when, completed surveys had been received from 147 women (45% of those invited), while another 7 (2%) had partially completed their online survey. Of those attempting the survey, 99 (30%) returned an online survey, 48 (15%) completed the paper. Table 3-4 details the final response rates.

**Table 3-4 Final response rates for the 1973-78 pilot cohort Survey 8 (N=329)**

	<b>N</b>	<b>(%)</b>
Completed online survey	99	30
Partially completed online survey	7	2
Completed paper survey	48	15
Withdrawn	2	0
Not this time	1	0
No response	172	52
<b>Total</b>	<b>329</b>	<b>100</b>

### **3.2.2 Main Survey 8**

#### **Planning and Development**

Frequencies, evaluation question responses and comments from the 1973-78 cohort Pilot Survey 8 were reviewed and recommendations for changes and improvements to the main survey were proposed and decided on.

It was decided not to include the invitation to take part in the Menarche-to-PreMenopause (M-PreM) Main Study with the eighth main survey of the 1973-78 ALSWH cohort. Instead, an expression of interest question for the M-PreM main study was included at the end of the main survey. Interested participants will be recruited into the M-PreM main study in a follow-up email invitation and telephone call.

Approval for 1973-78 cohort Survey 8 and associated materials was given by the Department of Health, and an ethics variation was then prepared for the M-PreM main study. Ethics approval from the University of Newcastle Human Research Ethics Committee was received on 30 May 2018, which was ratified by the University of Queensland Human Research Ethics Committee on 1 June 2018.

### **Changes and additions**

- 'Pilates' was added to the question on complementary and alternate therapies as this is a therapy that is commonly used in this age group.
- In the question on hospital admissions, 'Normal' was removed from 'Normal childbirth' as the definition of normal childbirth is unclear.
- The diagnoses 'High cholesterol' and 'Breast cancer' were deleted as this information will be collected in a separate question which asks about 'ever', rather than in the last three years. The diagnoses 'Osteoarthritis', 'Rheumatoid arthritis' and 'Other arthritis' were moved from the 'ever' timeframe question to the question referring to in the last three years. 'Gastro-oesophageal reflux disease (GORD/GERD)' and 'Thyroid problem' were added based on feedback from participants. An additional column was added to this question, so participants can indicate when they were first diagnosed with the condition.
- A pelvic pain item was added as it is important to know if participants have ever been diagnosed with or treated for pelvic pain.
- An item asking was added asking participants if they have ever been diagnosed with breast cancer and high cholesterol to fill in the time gap between birth and the last three years.
- An additional time frame "In the last 12 months" was added to the health checks questions to more exactly determine when these checks were had.
- 'Cut down on fats and / or sugars' was split into two items as these methods of weight loss are distinct. 'Cut down on carbohydrates (low carb)' was added, as this is a common weight loss method for this age group.
- 'Fly-in-fly out work' and 'Drive-in-drive-out work' were combined into 'Irregular work away from home.' The two items overlap, so combining them will provide data that are more accurate.
- The mother's pregnancy complications question was reformatted to make the response options clearer.
- Questions on the woman and the man primarily responsible for raising the participant were added to collection information on participant's main caregivers during childhood.
- The wordings 'Mother or mother figure' and 'Father or father figure' were changed to 'Mother or maternal caregiver' and 'Father or father caregiver' respectively, as these are more accurate terminologies. The questions on natural mother and natural father were deleted, as this information will now be captured in the questions on main caregivers during childhood.
- The question on childhood health was reworded to make it more grammatically correct.

- The response 'Married' was split into 'Married (same sex)' and 'Married (opposite sex)' to reflect the change in law regarding same sex marriage.

#### **Deletions**

- 'Diet books', 'Gluten free', 'Smoking' and 'Other' were deleted due to low percentages in the pilot.
- 'Is there anything further about contraception you would like to add?' was deleted, as this item is about conception rather than contraception. Information regarding contraception will be captured in the current contraception questions.
- The question on the childhood home was deleted as it did not provide useful information.
- The question on organised sport added in the pilot was deleted as it did not provide useful information.
- The 'please specify' and the text box were removed from 'Other' in the question about providing care. This item is only included in pilot surveys to allow participants to provide other potential response options that may need to be added to the list for the main survey.

All changes and additions to the survey are detailed in Table 3-5 and deletions are detailed in Table 3-6.

**Table 3-5 Item changes from 1973-78 Cohort Survey 8 Pilot to 1973-78 Cohort Survey 8 Main**

Item No	Topic	Source	Justification
1	Consultations	ALSWH	Unchanged
2	Consultations (allied health)	Modified from Australian Bureau of Statistics (1991) 1989-1990 National Health Survey Users' Guide. Canberra: ABS. Cat No. 4363.0	Unchanged
3	Complementary and alternate therapies	ALSWH	'Pilates' was added as this is a therapy that is commonly used in this age group.
4	Hospital admissions	ALSWH	'Normal' was removed from 'Normal childbirth' as the definition of normal childbirth is unclear.
5	GP visits	ALSWH	Unchanged
6	GP satisfaction	Modified from Davies AR & Ware JEJ. (1991). GHAA's consumer satisfaction survey and user's manual (2nd Edn). Washington DC: The Group Health Association of America (GHAA).	Unchanged
7	Female GP	ALSWH	Unchanged
8	Health care satisfaction	Modified from Davies AR & Ware JEJ. (1991). GHAA's consumer satisfaction survey and user's manual (2nd Edn). Washington DC: The Group Health Association of America (GHAA).	Unchanged
9-19	SF-36	Ware JE & Sherbourne CD. (1992) The MOS 36-Item Short-Form Health Survey (SF-36):1. Conceptual framework and item selection, Medical Care, 30(6), 473-483	Unchanged
20	Health care card	ALSWH	Unchanged

Item No	Topic	Source	Justification
21-22	Private health insurance	ALSWH - AUHS	Unchanged
23	Medication list	ALSWH	Unchanged
24	Diagnosis	Modified from Australian Bureau of Statistics (1991) 1989-1990 National health survey users' guide. Canberra: ABS. Cat No. 4363.0	<p>'High cholesterol' and 'Breast cancer' were deleted as this information will be collected in Q26.</p> <p>'Osteoarthritis', 'Rheumatoid arthritis' and 'Other arthritis' were added as the ever timeframe for these conditions is now known from the previous survey. Therefore, it is only necessary to ask about the last three years.</p> <p>'Gastro-oesophageal reflux disease (GORD/GERD)' and 'Thyroid problem' were added based on feedback from participants.</p> <p>An additional column was also added to this question, so participants can indicate when they were first diagnosed with the condition.</p>
25	Cervical cancer	ALSWH	Unchanged
26	Pelvic pain	ALSWH	This item was added as it is important to know if participants have ever been diagnosed with or treated for pelvic pain.
27	Ever diagnosed	ALSWH	This item was added as it is important to know if participants have ever been diagnosed with breast cancer and high cholesterol.
28	Health checks	Modified from Australian Bureau of Statistics (1991) 1989-1990 National health survey users' guide. Canberra: ABS. Cat No. 4363.0	The timeframes in this question were updated to allow the collection of more detailed information.
29	Abnormal Pap test	ALSWH	Unchanged

Item No	Topic	Source	Justification
30	Life events	Modified from Norbeck JS. (1984). Modification of live event questionnaires for use with female respondents. <i>Research in Nursing and Health</i> , 7, 61-71.	Unchanged
31	Fertility	ALSWH	Unchanged
32	Procedures	Modified from ALSWH (Survey 1), then revised according to national estimates for females aged 72-76 in Quality in Australian Health Care Study database (1995)	Unchanged
33	Mother's hysterectomy	Developed for ALSWH and M-PreM	Unchanged
34	Mother's age at menopause	Developed for ALSWH and M-PreM	Unchanged
35	HRT	Developed for ALSWH and M-PreM	Unchanged
36	Menstruation	Developed for ALSWH and M-PreM	Unchanged
37	Skipping periods	Developed for ALSWH and M-PreM	Unchanged
38	Period frequency	Developed for ALSWH and M-PreM	Unchanged
39	Menopause age	Developed for ALSWH and M-PreM	Unchanged
40	Stress	ALSWH	Unchanged
41	Weight loss methods	Modified from Crawford D & Owen N. (1994). The behavioural epidemiology of weight control. <i>Australian Journal of Public Health</i> , 18(2), 143-148.	'Cut down on fats and / or sugars' was split into two items as these methods of weight loss are distinct.

Item No	Topic	Source	Justification
			'Cut down on carbohydrates (low carb)' was added, as this is a common weight loss method for this age group.  'Diet books', 'Gluten free', 'Smoking' and 'Other' were deleted due to low percentages in the pilot.
42	Satisfaction with weight & shape	Modified from French SA, Story M, Downes B, Resnick MD & Blum RW. (1995). Frequent dieting among adolescents: psychosocial and health behaviour correlates. <i>American Journal of Public Health, 85(5)</i> , 695-701.	Unchanged
43	Weight	ALSWH	Unchanged
44	Ideal weight	Modified from French SA, Story M, Downes B, Resnick MD & Blum RW. (1995). Frequent dieting among adolescents: psychosocial and health behaviour correlates. <i>American Journal of Public Health, 85(5)</i> , 695-701.	Unchanged
45	Anxiety: Anxiety Scale from the DASS	Lovibond SH & Lovibond PF. (1995). Manual for the Depression Anxiety Stress Scales. (2nd ed.). Sydney: Psychology.	Unchanged
46	Pain	Whitehouse SL, Lingard EA, Katz JN & Learmonth ID. (2003). Development and testing of a reduced WOMAC function scale. <i>J Bone Joint Surg Am, 85-B(5)</i> ,706-711.	Unchanged
47	Managing time	Modified from Statistics Canada, Housing Family and Social Statistics Division (1987) General social survey analysis series. Ottawa: Canadian Government Publication Centre. ISSN 0836-043X	Unchanged

Item No	Topic	Source	Justification
48	Time use	Modified from Australian Bureau of Statistics (1993) Time use survey, Australia, 1992: user's guide. Canberra: ABS. Cat No. 4150.0.	Unchanged
49	Types of paid work	ALSWH	'Fly-in-fly out work' and 'Drive-in-drive-out work' were combined into 'Irregular work away from home.' The two items overlap, so combining them will provide data that are more accurate.
50	Symptoms	ALSWH	Unchanged
51	Drugs	National Drug Strategy household survey: survey report 1995 (1996)	Unchanged
52-58	Smoking	Modified from Australian Institute of Health and Welfare (AIHW) (1997) National Health Data Dictionary, Version 6.0. Standard questions on the use of tobacco among adults.	Unchanged
59-61	Alcohol	Modified from National Heart Foundation of Australia (1990). Risk factor prevalence study Survey no. 3 1989. National Heart Foundation of Australia and Australian Institute of Health.	Unchanged
62-63	Stairs	Modified from Sesso HD, Paffenbarger RS, & Lee I-M. (2000). Physical Activity and Coronary Heart Disease in Men: The Harvard Alumni Health Study. <i>Circulation</i> , 102(9), 975-980.	Unchanged
64	Sitting	ALSWH	Unchanged
65	Residential and postal postcode		Unchanged

Item No	Topic	Source	Justification
66	CES-D	Andresen EM, Carter WB, Malmgren JA, & Patrick DL. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. <i>American Journal of Preventative Medicine</i> , 10(2), 77-82.	Unchanged
67	Conception/pregnancy	ALSWH	'Is there anything further about contraception you would like to add?' was deleted, as this item is about conception rather than contraception. Information regarding contraception will be captured in Q68.
68	Current contraception	ALSWH	Unchanged
69	Currently pregnant	ALSWH	Unchanged
70	Ever been pregnant	ALSWH	Unchanged
71	Childbirth complications	ALSWH	Unchanged
72	Pregnancy and emotional well-being information	Beyond Blue	Unchanged
73	Ever given birth	ALSWH	Unchanged
74	Live births and still births	ALSWH	Unchanged
75	Pregnancy diagnosis	ALSWH	Unchanged
76	Details of birth	ALSWH and Beyond Blue	Unchanged

Item No	Topic	Source	Justification
77	Breastfed children	ALSWH	Unchanged
78	Breastfeeding	ALSWH	Unchanged
79-80	Children living with you	ALSWH	Unchanged
81-82	Child care	ALSWH	Unchanged
83-87	Maternity leave	Modified from the Longitudinal Study of Australians Children (LSAC) 2005 Infant questionnaire.	Unchanged
88-89	Breastfed as a child	Modified from the Longitudinal Study of Australians Children (LSAC)	Unchanged
90	Mother's pregnancy complications	Developed for the M-PreM substudy	This question was reformatted to make the response options clearer.
91	Need for care	Modified from Australian Bureau of Statistics (1993) Disability, Ageing and Carers Australia. Canberra: ABS. Cat. No. 4432.0	Unchanged
92-95	Providing care	Modified from Australian Bureau of Statistics (1993) Disability, Ageing and Carers Australia. Canberra: ABS. Cat. No. 4432.0	Unchanged
96	Providing care	ALSWH	'please specify' and the text box were removed from 'Other'. This item is only included in pilot surveys to allow participants to provide other potential response options that may need to be added to the list for the main survey.
97	Social support	Sherbourne CD & Stewart AL. (1991). The MOS social support survey. <i>Social Science and Medicine</i> , 32(6), 705-714	Unchanged

Item No	Topic	Source	Justification
98-99	Life isn't worth living/ Self harm	Modified from Beck A, Schuyler D & Herman I. (1974) Development of the Suicide Intent Scale. In Beck AT, Resnick HLP & Lettieri DJ. (Eds.) The prediction of suicide. Bowie, MD: Charles Press Publishers	Unchanged
100	GADS	Anxiety and depression scales from: Goldberg D, Bridges K, Duncan-Jones P & Grayson D. (1988). Detecting anxiety and depression in general medical settings. <i>British Medical Journal</i> , 297, 897-899.	Unchanged
101	Employment	ALSWH	Unchanged
102	Occupation	Modified from M2 and Australian standard classification of occupations. Second Edition. (1997). Catalogue No. 1220.0	Unchanged
103	Job security	ALSWH	Unchanged
104-107	Attitudes/behaviour of parental figures	ELSA, Wave 3, Life History Questionnaire	<p>Q105 'Mother or mother figure' was changed to 'Mother or maternal caregiver' as this is more accurate terminology.</p> <p>'Was this your natural mother' was deleted, as this information will now be captured in Q104.</p> <p>Q107 'Father or father figure' was changed to 'Father or paternal caregiver' as this is terminology that is more accurate.</p> <p>'Was this your natural father' was deleted, as this information will now be captured in Q106.</p> <p>Q104 and Q106 were added to collect information on participants' main caregivers during childhood.</p>
108-110	Childhood home	Excerpted from the Health and Retirement Study.	Unchanged

Item No	Topic	Source	Justification
111	Partner	ALSWH	Unchanged
112	Violent relationship	Hwalek MA & Sengstock MC. (1986). Assessing the probability of abuse of the elderly: Toward development of a clinical screening instrument. <i>Journal of Applied Gerontology</i> , 5(2), 153-173.	Unchanged
113	Abuse	Modified from Hegarty KL, Sheehan M, Schonfeld C. (1999) A multidimensional definition of partner abuse: development and preliminary validation of the Composite Abuse Scale. <i>J Fam Violence</i> , 14, 399-414.	Unchanged
114-118	Childhood health	Sharelife Study, Europe, Wave 3, 2008-9	Q114 the question stem was clarified from 'Would you say that your health during childhood was in general' to 'In general, would you say that your health during childhood was.'
119	Physical Activity	Active Australia. Armstrong T, Bauman A & Davies J. Physical activity patterns of Australian Adults: results of the 1999 National Physical Activity Survey. AIHW Canberra 2000	Unchanged
120	Organised sport	Provided by the Department of Health	Unchanged
121	Fruit intake	Ireland P, Jolley D, Giles G, O'Dea K. et al. (1994). Development of the Melbourne FFQ: a food frequency questionnaire for use in an Australian prospective study involving an ethnically diverse cohort. <i>Asia Pacific J Clin Nutr</i> ,3, 19-31.	Unchanged
122	Vegetable intake	ALSWH	Unchanged
123	Drinks	ALSWH	Unchanged

Item No	Topic	Source	Justification
124	Manage on income	ALSWH	Unchanged
125	Education	Modified from Australian Bureau of Statistics. (1993). 1996 Census of population and housing: Nature and content of the census. Canberra: ABS. Cat No. 2008.0.	Unchanged
126	Housing situation	ALSWH	Unchanged
127	Marital status	Modified from Australian Bureau of Statistics. (1993) 1996 Census of population and housing: Nature and content of the census. Canberra: ABS. Cat No. 2008.0.	'Married' was split into 'Married (same sex)' and 'Married (opposite sex)' to reflect the change in law regarding same sex marriage.
128	Who lives with you	Modified from Australian Bureau of Statistics. (1994) Australian Housing Survey: User Guide. Canberra: ABS. Cat No. 4180.0	Unchanged
129	Life satisfaction	ALSWH	Unchanged
130	Date of birth	ALSWH	Unchanged
131	Proxy	ALSWH	Unchanged
132	Reason for assistance in completing survey	ALSWH	Unchanged
133	EOI to participant in a Substudy	ALSWH	<p>Pilot participants were asked to complete a consent form to an additional substudy (MPreM) if they were interested in participating at the time of completing their ALSWH survey (on paper and online).</p> <p>For the main participants, this process has changed. Instead of providing consent to participate in the MPreM substudy,</p>

Item No	Topic	Source	Justification
			participants will be asked if they would be interested in receiving more information about the study at a later stage; an expression of interest. If interested in receiving more information, the participant will tick the checkbox.

**Table 3-6** Deleted items from 1973-78 Cohort Survey 8 Pilot to 1973-78 Cohort Survey 8 Main

Y8 Pilot item number	Topic	Source	Reason for deletion
108	Childhood home	Health and Retirement Study	This item was deleted as it did not provide useful information.
119	Organised sport	Provided by the Department of Health	This item was deleted as it did not provide useful information.

### **Data collection and interim response rates**

In June 2018, when they were between 40 and 45 years old, 11,659 women in the 1973-78 cohort were invited to complete the online survey (Survey 8). The online survey was programmed using DatStat Illume software. The online and paper surveys have the same wording and question order. Mailout and reminder activity is detailed in Table 3-7 . The mailout and reminder protocol used for the pilot (see Figure 3-1) was unchanged for the main survey.

The printing and mailing of the invitations and paper surveys were contracted to New Data Solutions Pty Ltd, who sub-contracted to Dual Print Solutions Pty Ltd, trading as Valiant Press. There was a delay with mailing the invitation letter by the contractor and/or printers and these were mailed on 20<sup>th</sup> June. The paper survey was mailed on the 26<sup>th</sup> July. The scanning application was developed in house at the University of Newcastle using the ScanTools Plus program for use by ALSWH staff, with the Scantron iNSIGHT 4ES OMR scanner purchased in 2014. Paper surveys are returned to ALSWH at the University of Newcastle where they are logged, checked, visually audited and the consent page is removed, scanned and securely stored on the ALSWH servers. As the surveys are processed, the scanner reads and stores the OMR fields and produces images of the fields to be hand entered in duplicate by the project assistants. Hand entered data are verified when the duplicate fields do not match and the survey images are securely stored on the ALSWH servers.

ALSWH staff will continue to remind participants who have not commenced the survey to start it, and to remind participants who have partially completed the online survey to finish it. Extra email links to the online survey and extra paper surveys will be sent as required. A final email will be sent just before the survey closes (around May 2019) allowing the participants approximately one year to complete the survey. Once the survey is closed and the data and images have been reconciled, paper surveys will be securely destroyed. The Databook for Survey 8 of the 1973-78 cohort will be available in December 2019.

**Table 3-7 Timetable of activity in 2018 for the 1973-78 cohort Survey 8**

Date 2015	Activity	No	Items	Number
4 June	Email	1	Emailed invitation to do online survey	8510
20 June	Mail	2	Mailed invitation to do online survey	3242
13 June	Email	3	Email reminder to do online survey	6463
27 June	SMS	4	SMS reminder to do online survey	5646
26 July	Mailout	5	Mail package including letter with online survey link, paper survey, brochure, change of details card and reply-paid envelope	7533
16 Aug	Email	6	Email reminder to do the survey	As required
29 Aug	SMS	7	SMS reminder to do the survey	As required
Aug – Nov	Phone call	8	Phone call to those who have not responded to the survey invitations and reminders	4385 added to phone reminder, 1799 attempted calls to date
Aug onwards	Email	1	Extra email invitation to do online survey	As required
Sept onwards	Mailout	5	Extra mailed package including letter with online survey link, paper survey, brochure, change of details card and reply-paid envelope	As required
Sept 2018	SMS	9	Final SMS to do the survey	As required
<b>PARTIALLY COMPLETED ONLINE SURVEYS</b>				
June onwards	Email	10	Automated email reminders to participants who partially completed their survey	Currently 2922 email reminders sent
June onwards	SMS	11	SMS reminders to participants who partially completed their survey	Currently 407 sms reminders sent
Jul onwards	Phone call	12	Phone call to those who partially completed their survey	Currently 379 added to phone reminder 261 attempted calls to date

Table 3-8 details the interim response rates for this survey. Completed (online or paper) surveys have been received from 5,845 women, which is approximately 50% of those invited; while another 258 (2%)

have partially completed their survey online. Of those attempting the survey, about 24% have returned a paper survey and 76% have attempted the online version.

**Table 3-8 Response rates for the 1973-78 cohort Survey 8 at 9 November 2018**

	<b>N</b>	<b>%</b>
Completed online survey	4164	35.6
Completed paper survey	1423	12.2
Partially completed online survey	258	2.2
Not this time	28	0.2
No response	5768	49.4
Withdrawn	39	0.3
Deceased	2	0
<b>Total mailed</b>	<b>11,682</b>	<b>100</b>

### **3.3 1921-26 cohort**

#### **3.3.1 Six Month Follow-up Survey 13**

The thirteenth Six Month Follow-up Survey (6MF13) of the 1921-26 cohort commenced on 2<sup>nd</sup> November 2017. The survey content is the same as that for previous waves of the Six Monthly Survey.

Surveys were mailed to participants who had:

- Completed a survey between five and six months ago
- Asked for a new survey to be sent
- Not done the last survey and it had been mailed to them between five and six months ago
- Selected 'Not this time' when sent the previous survey, between five and six months ago.

This process was repeated each month for another five months. The surveys were scanned in-house using the Scantron iNSIGHT 4ES OMR scanner.

Participants who were unable to complete a paper survey, either by themselves or with the assistance of someone else, were phoned and the survey was administered over the phone. The mailout activity is detailed in Table 3-9.

**Table 3-9 Timetable for Six Month Follow-Up Survey 13**

<b>Date</b>	<b>Activity</b>	<b>Items</b>	<b>Number</b>
November 2017	Mailout 1	Package mailed including survey, information letter, change of details card and reply-paid envelope	363 mailed

Date	Activity	Items	Number
December 2017	Mailout 2	Package mailed including survey, information letter, change of details card and reply-paid envelope	175 mailed
January 2018	Mailout 3	Package mailed including survey, information letter, change of details card and reply-paid envelope	242 mailed
February 2018	Mailout 4	Package mailed including survey, information letter, change of details card and reply-paid envelope	165 mailed
March 2018	Mailout 5	Package mailed including survey, information letter, change of details card and reply-paid envelope	167 mailed
April 2018	Mailout 6	Package mailed including survey, information letter, change of details card and reply-paid envelope	138 mailed
November 2017 to April 2018	Phone call	Telephone interview	51 completed

### 3.3.2 Six Month Follow-up Survey 14

The fourteenth Six Month Follow-up Survey (6MF14) commenced on 1<sup>st</sup> May 2017. The survey content remained the same as for previous 6MF surveys. Surveys were mailed in the same manner as for previous 6MF surveys, and the process will be repeated each month for six months, until the next round of follow-up survey begins. Those unable to complete the survey on paper will be offered a telephone survey. The mailout activity is detailed in Table 3-10.

**Table 3-10 Timetable for Six Month Follow-Up Survey 14 at 24 October 2018**

Date	Activity	Items	Number
May 2018	Mailout 1	Package mailed including survey, information letter, change of details card and reply-paid envelope	312 mailed
June 2018	Mailout 2	Package mailed including survey, information letter, change of details card and reply-paid envelope	127 mailed
July 2018	Mailout 3	Package mailed including survey, information letter, change of details card and reply-paid envelope	153 mailed
August 2018	Mailout 4	Package mailed including survey, information letter, change of details card and reply-paid envelope	244 mailed

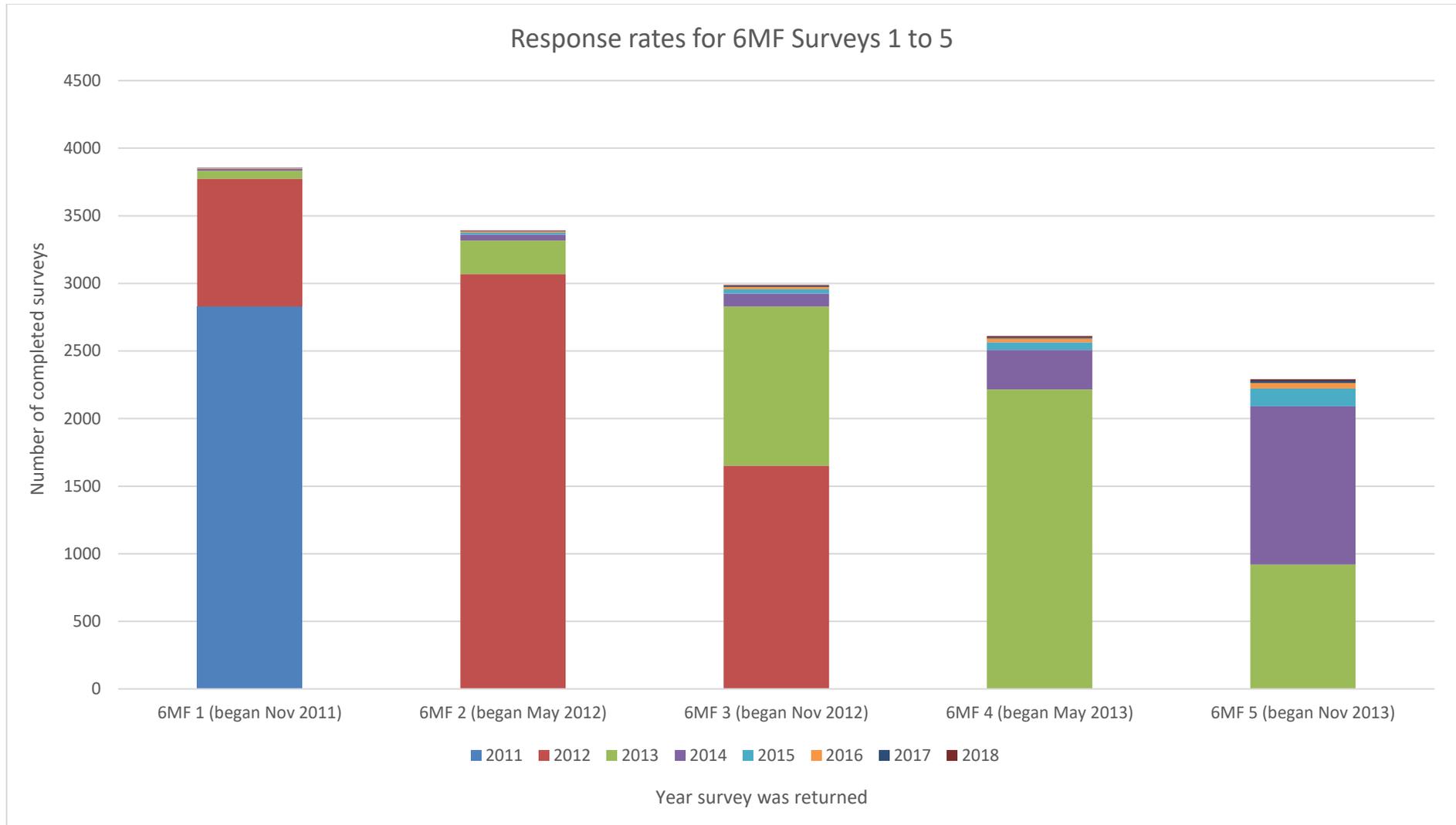
Date	Activity	Items	Number
September 2018	Mailout 5	Package mailed including survey, information letter, change of details card and reply-paid envelope	196 mailed
October 2018	Mailout 6	Package mailed including survey, information letter, change of details card and reply-paid envelope	144 mailed
May to October	Phone call	Telephone interview to those unable to complete the survey by themselves	35 completed to date

**Table 3-11 Response rates for six monthly follow-up surveys at 24 October, 2018**

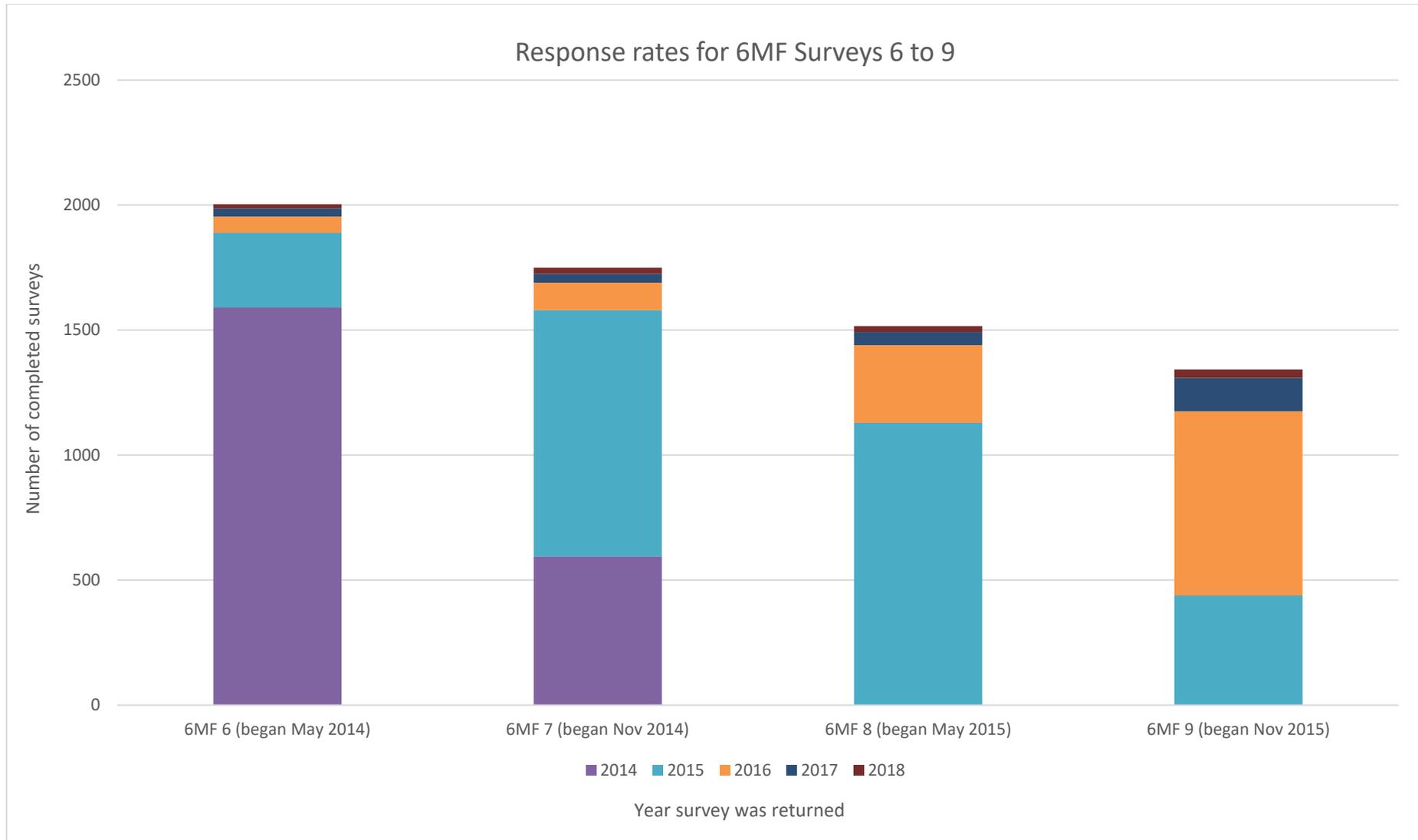
First Survey	N	%
Total Completed	3,855	82
Total Mailed	4,707	100
Second Survey	N	%
Total Completed	3,390	90
Total Mailed	3,778	100
Third Survey	N	%
Total Completed	2,988	90
Total Mailed	3,325	100
Fourth Survey	N	%
Total Completed	2,610	90
Total Mailed	2,905	100
Fifth Survey	N	%
Total Completed	2,290	90
Total Mailed	2,533	100
Sixth Survey	N	%
Total Completed	2,003	89
Total Mailed	2,241	100
Seventh Survey	N	%
Total Completed	1,750	89
Total Mailed	1,962	100

Eighth Survey	N	%
Total Completed	1,516	90
Total Mailed	1,688	100
Ninth Survey	N	%
Total Completed	1,342	91
Total Mailed	1,471	100
Tenth Survey	N	%
Total Completed	1,157	89
Total Mailed	1,296	100
Eleventh Survey	N	%
Total Completed	990	89
Total Mailed	1110	100
Twelfth Survey	N	%
Total Completed	804	87
Total Mailed	925	100
Thirteenth Survey	N	%
Total Completed	601	87
Total Mailed	693	100
Fourteenth Survey	N	%
Total Completed	335	83
Total Mailed	405	100

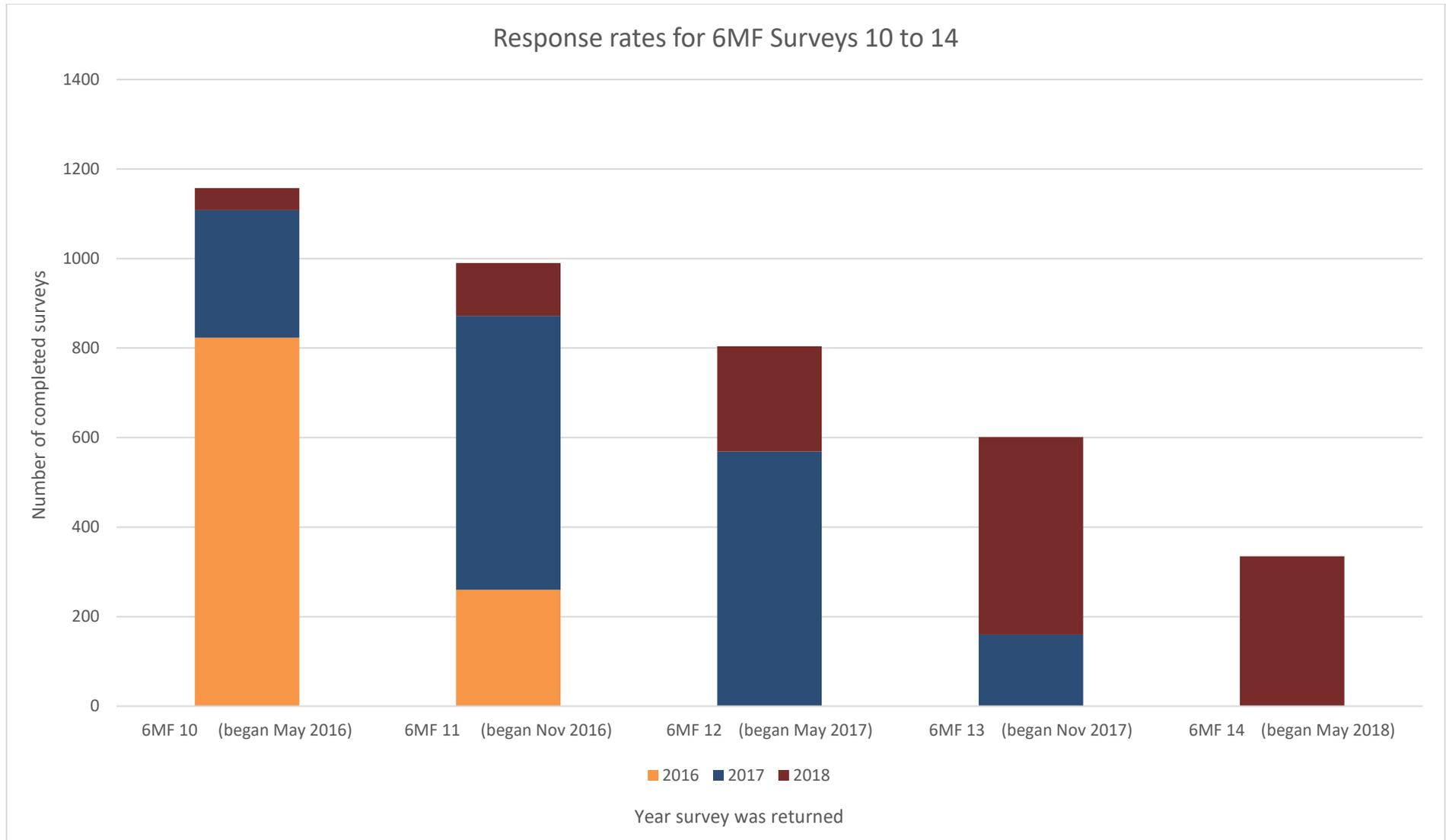
The responses for the six-month follow up surveys can also be shown graphically (Figure 3-2, Figure 3-3 and Figure 3-4). The graphs also show when the surveys have been returned – for example, the first survey (6MF Survey 1) began in Nov 2011 and some were still being returned in 2018, the second survey (6MF Survey 2) began in May 2012 and similarly, some were still being returned in 2018, and so on.



**Figure 3-2 Number of completions for 1921-26 cohort six month follow-up surveys 1 to 5, at 24 October 2018.**



**Figure 3-3 Number of completions for 1921-26 cohort six month follow-up surveys 6 to 9, at 24 October 2018.**



**Figure 3-4 Number of completions for 1921-26 cohort six month follow-up surveys 10 to 14, at 24 October 2018.**

## 4. MAINTENANCE OF COHORTS

### 4.1 Introduction

This section provides updates on retention of participants in each of the ALSWH cohorts. Maintenance strategies, including updating of the National Death Index, are also outlined.

### 4.2 Update of sample and response rates

#### 4.2.1 First survey of the 1973-78, 1946-51 and 1921-26 cohorts in 1996.

More than 40,000 women responded to the first survey of the original ALSWH cohorts in 1996. Due to uncertainties about the accuracy of the Medicare database (which was used as the sampling frame for the stratified random samples), response rates for this first survey cannot be exactly specified. However, it is estimated that 41-42% of the 1973-78 cohort, 53-56% of the 1946-51 cohort and 37-40% of the 1921-26 cohort responded to the initial invitation to participate. (Brown WJ, Dobson AJ, Bryson L, & Byles JE, Women's Health Australia: On the progress of the main cohort studies. *Journal of Women's Health & Gender-Based Medicine*, 1999; 8(5): 681-688). Confidentiality restrictions meant that the names of the selected women were unknown to researchers and usual methods of encouraging participation (e.g. by telephone) could not be used.

Some participants completed Survey 1 in 1996 and did not provide any contact details (532 women from the 1973-78 cohort, 383 women from the 1946-52 cohort, and 508 women from the 1921-26 cohort). Also, a very small number of women have alerted the study that they were not eligible by their birth date and they have been removed. Hence the numbers of women actually enrolled in the study were 14,247 women in the 1973-78 cohort, 13,714 women in the 1946-51 cohort and 12,432 women in the 1921-26 cohort (Lee C, Dobson AJ, Brown WJ, Bryson L, Byles J, Warner-Smith P & Young AF. (2005). Cohort Profile: the Australian Longitudinal Study on Women's Health. *International Journal of Epidemiology*, 34(5), 987-991).

#### 4.2.2 1973-78 cohort

Among the 1973-78 cohort, 69% responded to Survey 2 in 2000, 66% to Survey 3 in 2003, 68% responded to Survey 4 in 2006, 62% to Survey 5 in 2009, 62% to Survey 6 in 2012, and 57% responded to Survey 7 in 2015 (See Table 4-1). This retention compares well with other surveys of this highly mobile age group. The major reason for non-response among the 1973-78 cohort is that the research team has been unable to contact the women (between 21% and 32% of the cohort at subsequent surveys), despite using all possible methods of maintaining contact. Women in their twenties and thirties are characterised by high levels of mobility, change of surnames on marriage, often not having telephone listings, not being registered to vote, and making extended trips outside Australia for work, education, or recreation. Despite these losses, modelling has shown that there is no serious bias in estimates of associations between risk factors and health outcomes in longitudinal models (Powers J & Loxton D. 2010, The impact of attrition in an 11-year prospective longitudinal study of younger women. *Annals of Epidemiology*, 20(4), 318-321). Women from this cohort are completing their 8<sup>th</sup> survey during 2018.

**Table 4-1 Participation and retention of 14,247 women in the 1973-78 cohort of women who were 18-23 years old at the first survey in 1996\***

	Survey 2 (age 22-27)	Survey 3 (age 25-30)	Survey 4 (age 28-33)	Survey 5 (age 31-36)	Survey 6 (age 34-39)	Survey 7 (age 37-42)
Deceased	22	33	50	58	77	102
Frail	3	9	12	15	16	16
Withdrawn	230	518	800	951	1157	1436
<b>TOTAL INELIGIBLE</b>	<b>255</b>	<b>560</b>	<b>862</b>	<b>1024</b>	<b>1250</b>	<b>1554</b>
Did not do survey	1332	653	1371	1994	1455	1399
No contact	2972	3953	2869	3030	3533	4108
Respondent	9688	9081	9145	8199	8009	7186
<b>TOTAL ELIGIBLE</b>	<b>13,992</b>	<b>13,687</b>	<b>13,385</b>	<b>13,223</b>	<b>12,997</b>	<b>12,693</b>
<b>RESPONSE RATE (%)</b>	<b>69.2%</b>	<b>66.3%</b>	<b>68.3%</b>	<b>62.0%</b>	<b>61.6%</b>	<b>56.6%</b>

\*data known as at 31<sup>st</sup> July 2018

### 4.2.3 1946-51 cohort

Retention has been much higher among the 1946-51 cohort of women: 92% responded to Survey 2 in 1998, 85% responded to Survey 3 in 2001, Survey 4 in 2004 and Survey 5 in 2007, 83% responded to Survey 6 in 2010, 81% responded to Survey 7 in 2013, and 80% responded to Survey 8 in 2016 (See Table 4-2). The major reasons for non-response among the 1946-51 cohort has been that the research team has been unable to contact the women (6% to 13% of eligible women between Survey 2 and Survey 8).

**Table 4-2 Participation and retention of 13,715 women in the 1946-51 cohort of women who were 45-50 years old at the first survey in 1996\***

	Survey 2 (age 47-52)	Survey 3 (age 50-55)	Survey 4 (age 53-58)	Survey 5 (age 56-61)	Survey 6 (age 59-64)	Survey 7 (age 62-67)	Survey 8 (age 65-70)
Deceased	50	119	216	328	474	673	871
Frail	7	23	34	51	70	100	120
Withdrawn	209	424	622	870	1108	1651	2005
<b>TOTAL INELIGIBLE</b>	<b>266</b>	<b>566</b>	<b>872</b>	<b>1249</b>	<b>1652</b>	<b>2424</b>	<b>2996</b>
Did not do survey	254	997	886	995	1148	1051	714
No contact	856	925	1051	832	903	1088	1382
Respondent	12338	11226	10905	10638	10011	9151	8622
<b>TOTAL ELIGIBLE</b>	<b>13,448</b>	<b>13,148</b>	<b>12,842</b>	<b>12,465</b>	<b>12,062</b>	<b>11,290</b>	<b>10,718</b>
<b>RESPONSE RATE (%)</b>	<b>91.7%</b>	<b>85.4%</b>	<b>84.9%</b>	<b>85.3%</b>	<b>83.0%</b>	<b>81.1%</b>	<b>80.4%</b>

\*data known as at 31<sup>st</sup> July 2018

#### 4.2.4 1921-26 cohort

Of women from the 1921-26 cohort, 93% responded to Survey 2 in 1999, 88% to Survey 3 in 2002, 87% to Survey 4 in 2005, 81% to Survey 5 in 2008, and 81% to Survey 6 in 2011 (See Table 4-3). The major reason for non-response among the 1921-26 cohort was the non-return of the questionnaire, rising from 4% at Survey 2 to 17% at Survey 6, although up to 9% of participants could not be contacted. Non-respondent women tended to report poorer self-rated health at Survey 1 than respondents. The effects of these losses were evaluated in terms of losses due to death and non-death<sup>1</sup>. Brilleman and colleagues concluded that non-death losses were potentially a greater source of bias than effects of death.

<sup>1</sup>Brilleman SL, Pachana NA & Dobson AJ. (2010). The impact of attrition on the representativeness of cohort studies of older people. *BMC Medical Research Methodology*, 10. doi: 7110.1186/1471-2288-10-71).

**Table 4-3 Participation and retention of 12,432 women in the 1921-26 cohort of women who were aged 70-75 years at Survey 1 in 1996\***

	<b>Survey 2 (age 73-78)</b>	<b>Survey 3 (age 76-81)</b>	<b>Survey 4 (age 79-84)</b>	<b>Survey 5 (age 82-87)</b>	<b>Survey 6 (age 85-90)</b>
Deceased	549	1237	2287	3623	5282
Frail	95	303	525	596	791
Withdrawn	563	1090	1361	1372	1345
<b>TOTAL INELIGIBLE</b>	<b>1207</b>	<b>2630</b>	<b>4173</b>	<b>5591</b>	<b>7418</b>
Did not do survey	481	861	592	640	862
No contact	310	295	509	641	97
Respondent	10434	8646	7158	5560	4055
<b>TOTAL ELIGIBLE</b>	<b>11,225</b>	<b>9802</b>	<b>8259</b>	<b>6841</b>	<b>5014</b>
<b>RESPONSE RATE (%)</b>	<b>93.0%</b>	<b>88.2%</b>	<b>86.7%</b>	<b>81.3%</b>	<b>80.9%</b>

\*data known as at 31<sup>st</sup> July 2018

#### 4.2.5 Six-month follow-up surveys of the 1921-26 cohort

From November 2011, shorter surveys containing a set of core questions were mailed to the 1921-26 cohort every six months after the return of the previous survey. Table 4-4 shows the numbers of eligible participants and respondents at the end of each six month period.

**Table 4-4 Participation in 6-month follow up surveys of the 12,432 women in the 1921-26 cohort (from November 2011 onwards)\***

Survey Date	Deceased	Withdrawn	TOTAL INELIGIBLE	No response	Respondent	TOTAL ELIGIBLE	Response (%)
May 2012	5532	2334	<b>7866</b>	1136	3430	<b>4566</b>	<b>75.1</b>
Nov 2012	5927	2363	<b>8290</b>	882	3260	<b>4142</b>	<b>78.7</b>
May 2013	6227	2409	<b>8636</b>	954	2842	<b>3796</b>	<b>74.9</b>
Nov 2013	6620	2347	<b>8967</b>	992	2473	<b>3465</b>	<b>71.4</b>
May 2014	6947	2294	<b>9241</b>	1073	2118	<b>3191</b>	<b>66.4</b>
Nov 2014	7288	2181	<b>9469</b>	999	1964	<b>2963</b>	<b>66.3</b>
May 2015	7617	2102	<b>9719</b>	987	1726	<b>2713</b>	<b>63.6</b>
Nov 2015	7962	1967	<b>9929</b>	979	1524	<b>2503</b>	<b>60.9</b>
May 2016	8261	1875	<b>10,136</b>	934	1362	<b>2296</b>	<b>59.3</b>
Nov 2016	8591	1740	<b>10,331</b>	854	1247	<b>2101</b>	<b>59.4</b>
May 2017	8873	1678	<b>10,551</b>	819	1062	<b>1881</b>	<b>56.5</b>
Nov 2017	9203	1534	<b>10,737</b>	716	979	<b>1695</b>	<b>57.8</b>
May 2018	9302	1546	<b>10,848</b>	707	877	<b>1584</b>	<b>55.4</b>
Nov 2018*	9304	1570	<b>10,874</b>	1155	403	<b>1558</b>	<b>25.9*</b>

\* using 6MF questionnaires logged by 24 October 2018; this 6MF collection period is still open for respondents.

#### 4.2.6 1989-95 cohort

In 2012 and 2013, 17,010 women aged 18-23 years old were enrolled in the 1989-95 cohort. Women were mainly recruited using the internet and social media platforms. Consistent with the other cohorts, women were required to have a Medicare card. Women completed the online survey and provided consent to linkage of survey data with administrative databases such as Medicare.

Unlike the original cohorts, the 1989-95 cohort have been surveyed annually. There was a steep decline in response at the cohort's second survey in 2014 (down to 70% of respondents from the baseline survey), but the response rate appears to have plateaued at around 55%-60% for subsequent surveys (Table 4-5).

**Table 4-5 Participation and retention of 17,012 women in the 1989-95 cohort of women who were aged 18-23 years at Survey 1 in 2013\***

	Survey 2 (age 19-24)	Survey 3 (age 20-25)	Survey 4 (age 21-26)	Survey 5 (age 22-27)
Deceased	1	6	8	13
Frail	1	1	1	1
Withdrawn	681	694	1744	1943
<b>TOTAL INELIGIBLE</b>	<b>683</b>	<b>701</b>	<b>1753</b>	<b>1957</b>
Did not do survey	2362	3879	1850	1813
No contact	2621	3469	4400	4745
Respondent	11344	8961	9007	8495
<b>TOTAL ELIGIBLE</b>	<b>16,327</b>	<b>16,309</b>	<b>15,257</b>	<b>15,053</b>
<b>RESPONSE RATE (%)</b>	<b>69.5%</b>	<b>54.9%</b>	<b>59.0%</b>	<b>56.4%</b>

\*data known as at 31<sup>st</sup> July 2018

#### 4.3 Maintenance strategies

Cohort maintenance and tracking of 'return to sender' mail is ongoing. The office team continues to track all women from the original three cohorts who responded to Survey 1 in 1996 and from the new cohort of young women who responded to Survey 1 in 2012/13 and who are not known to have died or withdrawn from the survey since then. This includes women who did not respond to Survey 2, through to the latest survey for all cohorts. Participants for whom we have no current contact details remain in the tracking system unless they are positively identified as found, deceased, withdrawn, permanently emigrated or otherwise ineligible, or are unwilling to participate.

Before 2011 the Australian Electoral Commission (AEC) supplied the study with age range extracts of women on the Electoral Roll. These were used to look up a participant's residential and postal addresses. The AEC stopped allowing this in 2011, although an electronic copy of the current Electoral Roll is available for public inspection at any AEC office. This has resulted in a more time-consuming

tracking process. Despite this, the Electoral Roll has been found to be effective in tracking participants who have become lost to contact. Participants found in this way are sent a survey or reminder for their current or next survey by mail.

Secondary contacts, mobile phone numbers, and email addresses continue to be important in reconnecting with participants who become lost to contact. Publically available information, published on various websites including White Pages, Facebook, Reverse Australia phone number listings, and obituary notices assist in the process.

#### **4.4 National Death Index**

Participants in the study have been linked to the National Death Index (NDI) on an annual and, sometimes, on a bi-annual basis to identify women who are recorded as being deceased. This not only adds to information provided by family members, but also provides data on causes of death.

A list of 49,078 participants' details, including unconfirmed deceased participants, and participants who have withdrawn from the project, was sent to AIHW in December 2017 for matching against the National Death Index. Additional records with maiden names were not included on this occasion. A list of 10,409 unique record pairs were returned by AIHW in January 2018 for clerical review.

Each record pair comparison received a weight that reflects the quality of the link: the higher the weight, the higher the quality (as determined by the linking algorithm).

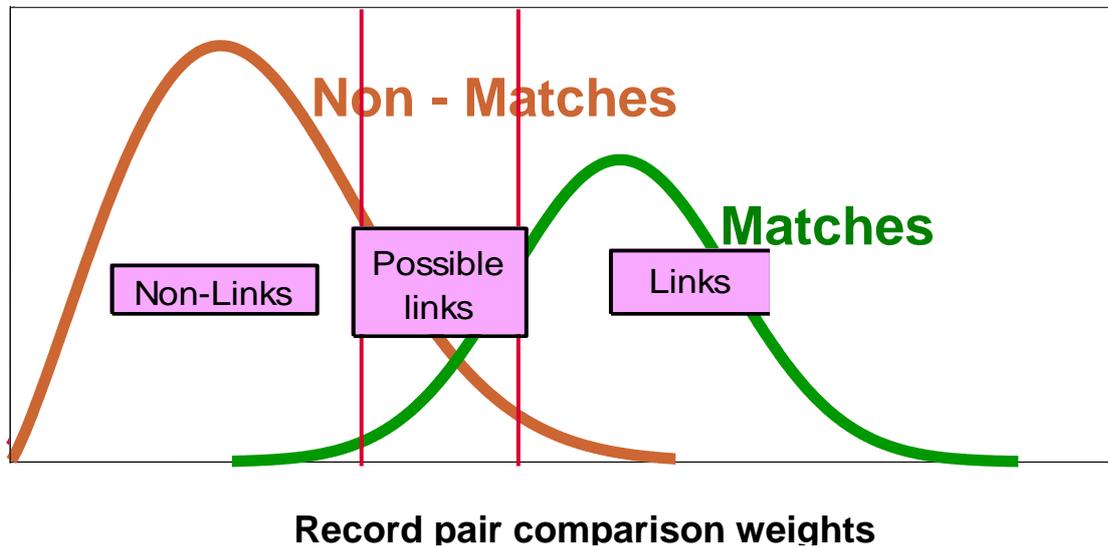
In general, the main contribution to the weight is made by the names. There are two factors that influence the weight that a name-pair contributes. The first is the frequency of the name in the portion of the NDI selected. For example, a link of Jane to Jane receives far less weight (about 6.5) than a link of Zipporah to itself (about 20) because the former is much more likely to occur by chance. The second factor comes into play when the names are not the same. An algorithm is used to determine how 'close' the two names are. Names that are very similar receive almost the same weight as names that are exactly the same. As the difference grows, the weight diminishes until it reaches a maximum disagreement of about -10.

Day, month and year of birth also contribute to the weight. The agreement and disagreement weights are not based on frequency and consider only exact agreement or disagreement on each field. In passes where the DOB is used and an error is allowed to occur in the year value, a weight penalty of -1 applies for each year that the pair's DOBs disagree by. The last and smallest contribution to the weight is for agreement or disagreement of sex<sup>1</sup>.

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<sup>1</sup> Reference: Australian Government, Australian Institute of Health and Welfare (AIHW), 2013. User-guide to the NDI results file.

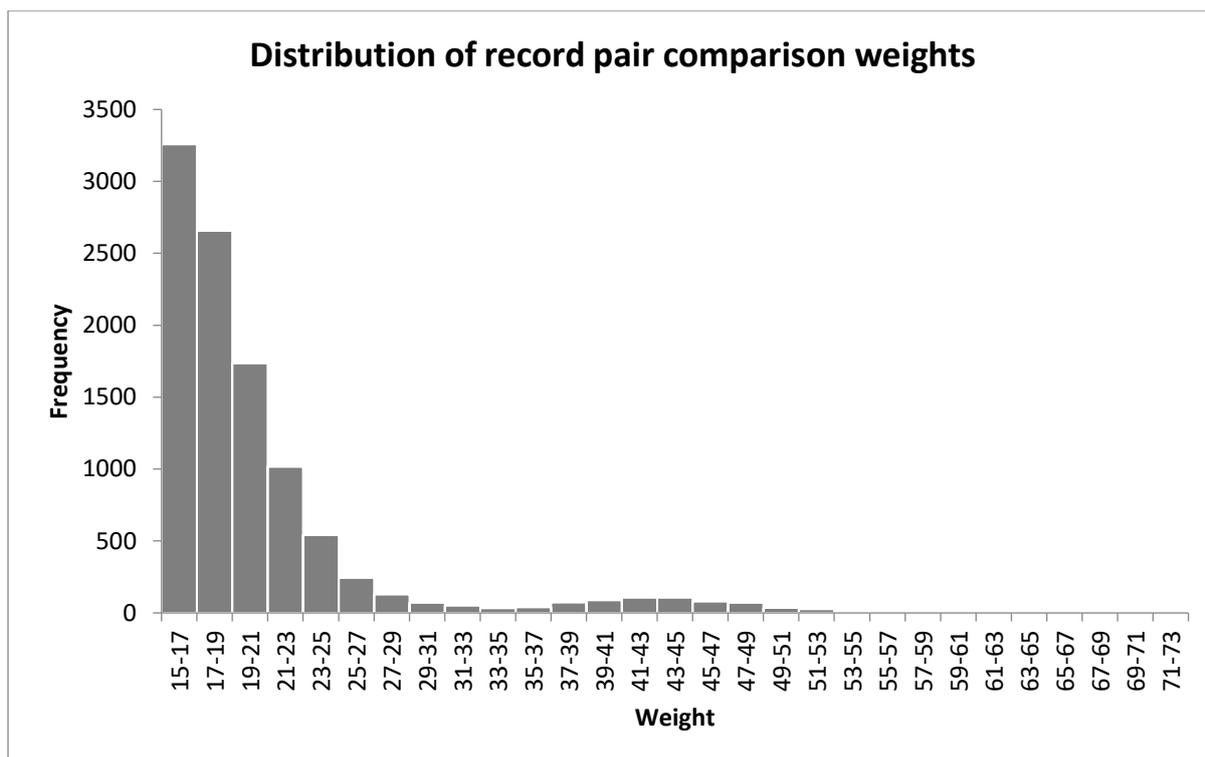
The record pairs can be divided into three regions – non-links (reject), possible links (review) and links (accept). The majority of the clerical review will be done in the ‘possible links’ region. These three regions are illustrated in **Figure 4-1**.



**Figure 4-1** Idealised distribution of record pair comparison weights from a hypothetical linkage.

Quite often record pairs can be accepted or rejected from a certain weight onwards without having to clerically review the records. For example, if all links below a weight cut-off of 10 are to be rejected, a ‘lower weight bound’ of 10 can be applied to automatically reject any record pairs below that weight. The same applies for records that can be accepted above a weight cut-off of, for example 25. An ‘upper weight bound’ of 25 can be applied to automatically accept all the record pairs above a weight of 25.

Figure 4-2 shows a graph of the distribution of weights of record pairs in the clerical review file. In the clerical review of the ALSWH record pairs an upper weight bound of 35 was used in the past to automatically accept record pairs greater than or equal to this value. However it has been found necessary to check those matches with a weight greater than or equal to 35 where the names, sex or date of birth do not agree or if the date of death is before the date of last contact.



**Figure 4-2 Distribution of weights of record pairs in the clerical review file.**

The ALSWH record pairs were coded according to the closeness of the match of the ALSWH project date of birth with the NDI date of birth and the closeness of the match of the project surname, first name, and middle name with those recorded on the NDI. Those with exactly matching date of birth and surname, first name and middle name, and with a weight greater than or equal to 35 (Pass 1) were taken as deceased (597 records). There was one record with exactly matching date of death and surname, first name and middle name, and weight greater than or equal to 35 (Pass 2). The 77 remaining records with a weight great than or equal to 35 (Pass 3) were checked and 72 were found to be deceased. The remainder were doubtful matches and were not accepted. Those with matching date of birth and date of death (Pass 4) were checked and all five matches were confirmed. Records with the weight greater than 25 were checked (Pass 5) and 49 matches were confirmed as deceased. Further records where the first name, middle name and date of birth matched with the weight greater than or equal to 20 (Pass 6) were checked and two extra deceased matches were identified. Records where the participant was known to be deceased with a weight greater than or equal to 10 (Pass 7) were checked and one extra deceased match was found. Records where the surname and the date of birth matched (Pass 8) were checked and two matches were confirmed. Records where the last known participant address matched the NDI record (Pass 9) were checked and four matches were identified. In cases where there was any doubt whether the deceased person was one of the ALSWH participants the review pair was rejected. Each match accepted was checked to see if they were an ALSWH known deceased participant or a new deceased participant. A table showing the characteristics of each successive pass is shown in Table 4-6 and the results of each pass is shown in Table 4-7.

**Table 4-6 Criteria for the clerical review passes**

Pass	Sur-name	First name	Middle name	Deceased	DOB	DOD	Address	Weight	Make deceased
1	Same as NDI	Same as NDI	Same as NDI or is null		Same as NDI				Auto-matically
2	Same as NDI	Same as NDI	Same as NDI or is null			Same as NDI			Auto-matically
3								>=35	Check
4					Same as NDI	Same as NDI			Check
5								>=25	Check
6		Same as NDI	Same as NDI		Same as NDI			>=20	Check
7				ALSWH known deceased				>=10	Check
8	Same as NDI				Same as NDI			>=15	Check
9							First 10 characters of the addresses match	>+10	Check

**Table 4-7 Summary of National Death Index matching results**

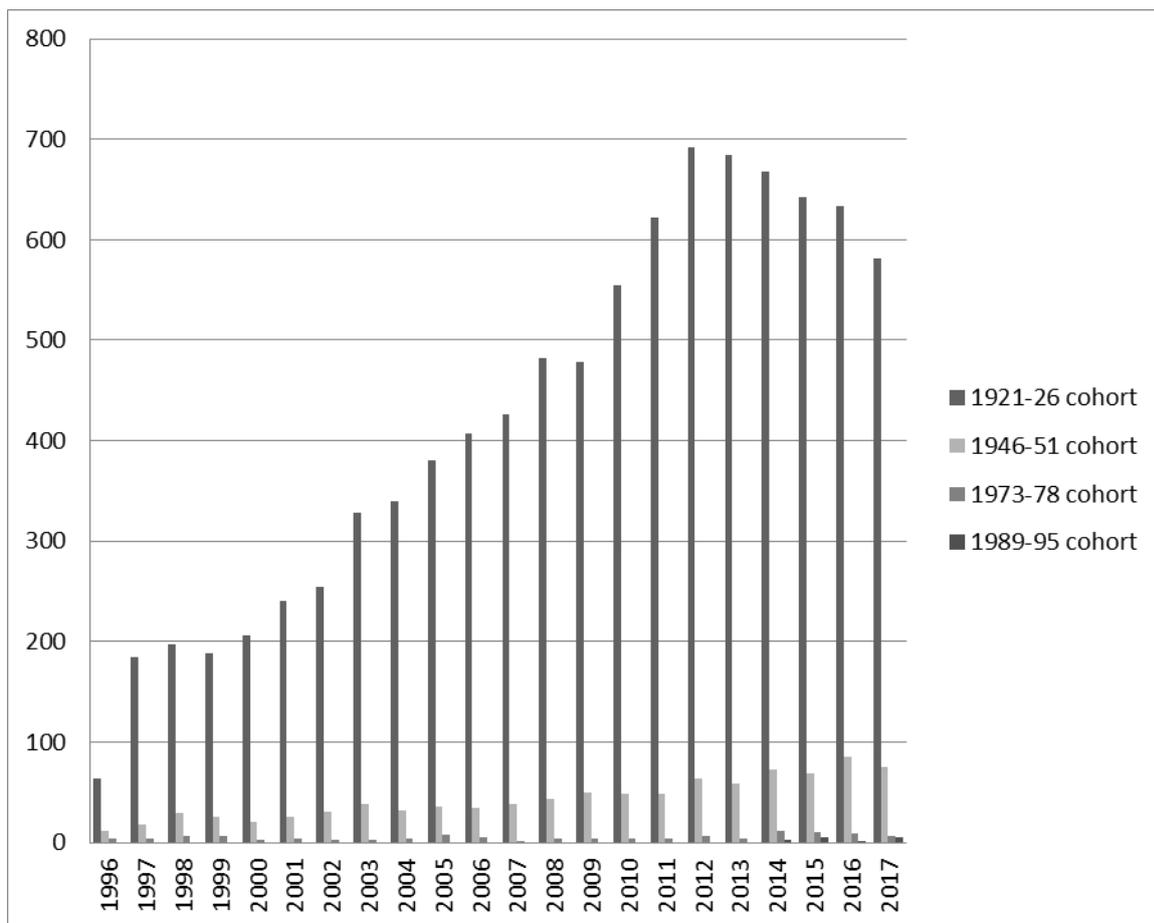
Pass	Known deceased	New deceased	Total confirmed	Doubtful match	Not checked	Duplicates	Total
1	107	490	597				597
2	1		1				1
3	7	65	72	5			77
4	5		5				5
5	2	47	49	472			521
6		2	2	19			21
7	1		1	22			23
8		5	5	34			39
9		4	4	1			5
Remainder			0	30	9093		9123
Total	123	610	733	583	9093	0	10409

Of the 733 matches identified, 123 deaths were known to ALSWH, 168 were new notifications and 442 were notification of deaths of participants who had withdrawn (Table 4-8).

**Table 4-8 Summary of National Death Index matching results**

Confirmed deceased	123
New deceased	168
Withdrawn deceased	442
Doubtful match	583
Duplicate deceased record	0
Not checked	9,093
<b>TOTAL</b>	<b>10,409</b>

A total of 10,594 participant deaths had been confirmed with the NDI at the time of the clerical review, this includes participants who have withdrawn (4,224). Four deaths occurred overseas and 61 deaths (0.6%) have never been confirmed with the NDI. Figure 4-3 shows the confirmed deaths by cohort – the majority of the confirmed deaths occur in the 1921-26 cohort, with a few in the 1946-51 cohort, very few in the 1973-78 cohort and even less in the 1989-95 cohort.



**Figure 4-3 Number of confirmed deaths of ALSWH participants for each year by main cohort.**

Figure 4-4, Figure 4-5 and Figure 4-6 below show the results for each year that matching to the NDI has been conducted.

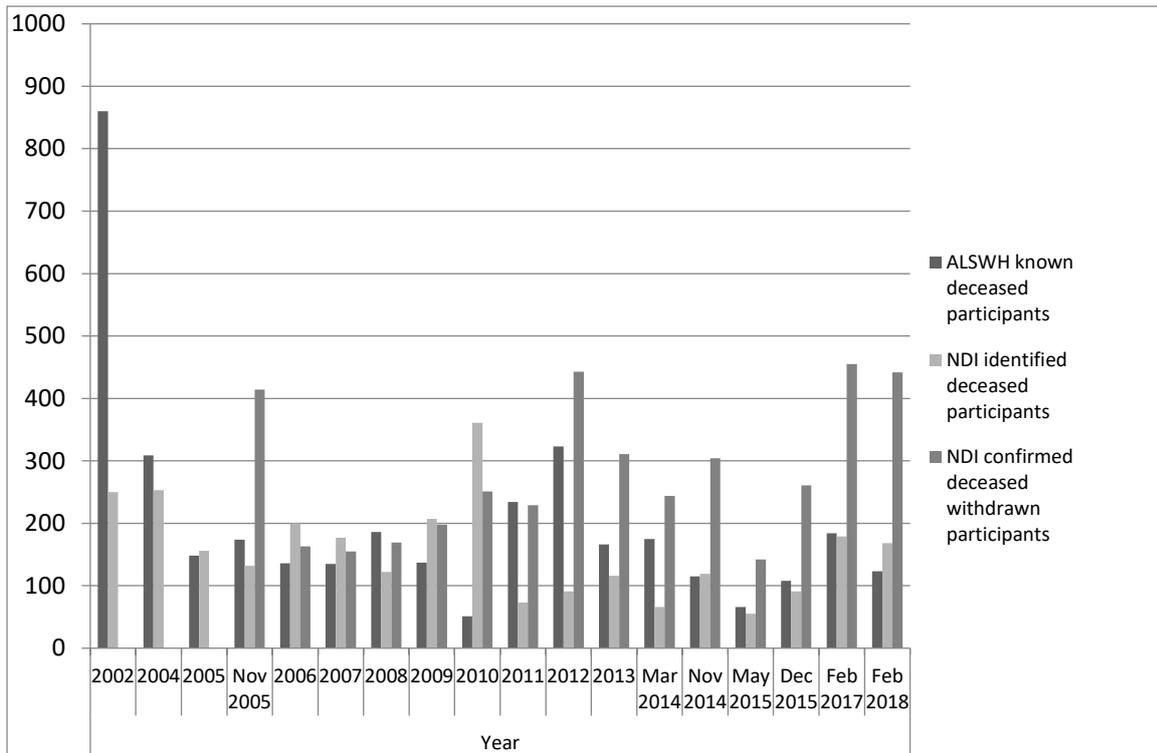


Figure 4-4 Number of matched deaths at each time matching has been conducted.

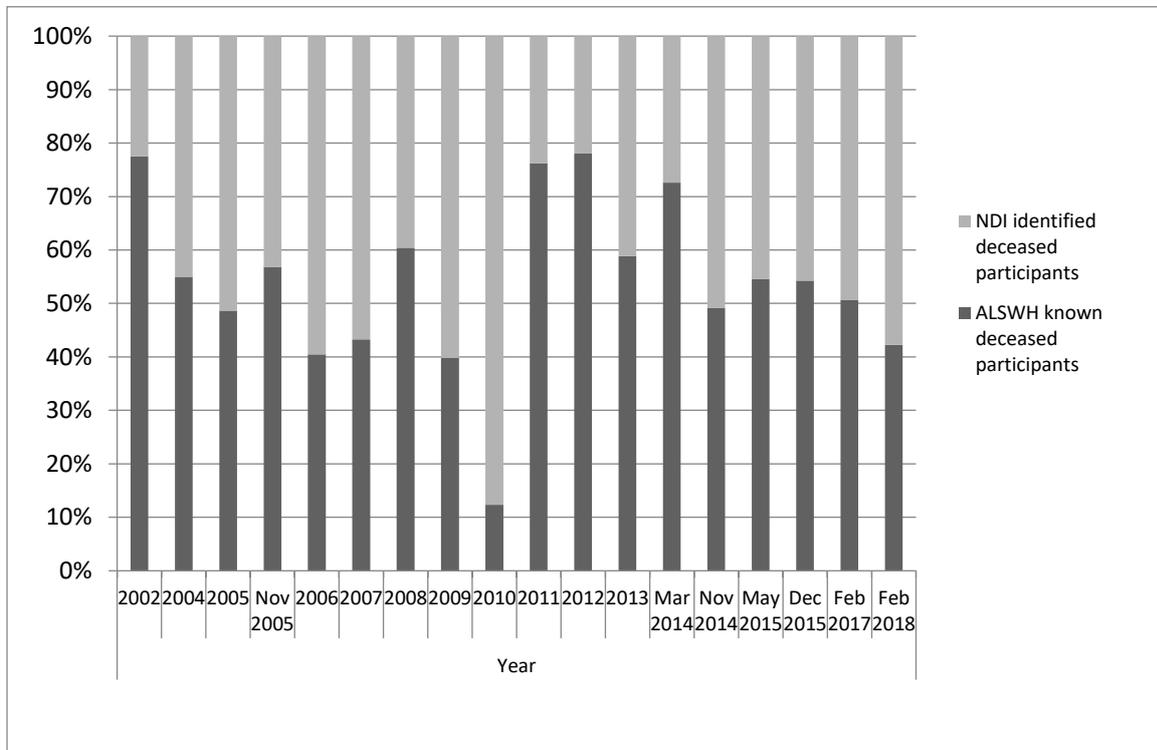
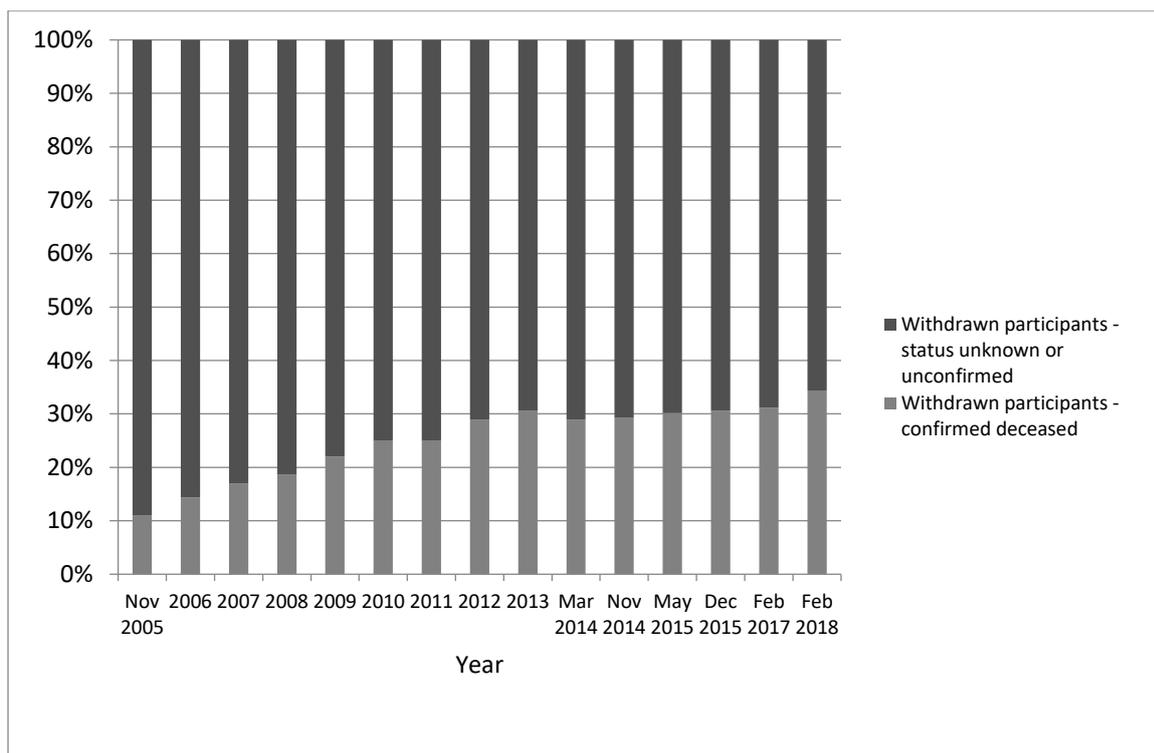


Figure 4-5 Percentage of ALSWH known and unknown deaths confirmed by NDI at each time of matching.



**Figure 4-6 Percentage of withdrawn participants who are known to be deceased at each time of matching.**

#### 4.5 Cause of Death Codes

Of the 10,594 deaths confirmed with the NDI (including participants who have withdrawn) cause of death (COD) codes are available for 9,854. The 740 deaths for which there is no COD information have been matched after 2012.

**Table 4-9 Confirmed deaths with and without cause of death (COD) codes by year of matching**

	Year of matching						Total
	Before 2013	2013	2014	2015	2016	2017	
<b>No COD Code</b>	18	1	7		5	709	740
<b>COD Codes</b>	6,688	592	1,015	722	813	24	9,854
<b>Deceased</b>	6,706	593	1,022	722	818	733	10,594

There can be up to 19 causes of death. The first cause of death is the underlying cause of death. All others are additional causes of death. Multiple cause of death coding was used from 1997 onwards. The classification system used for causes of death depends on when the person died and when their record was placed on the NDI. Those deaths that were registered in or before 1996 are recorded in ICD-9, those registered in 1997 and 1998 are a combination of ICD-9 and ICD-10 and those registered in 1999 and onwards are recorded in ICD-10.

## 5. Data linkage

ALSWH data can be linked with external administrative health datasets. The Study arranges and manages linkages with major national datasets - such as the Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS) - and major state datasets - such as cancer registries and hospital admissions. Table 5-1 summarises the linked data collections accessed under ALSWH.

Each external dataset usually has its own Data Custodian, and there is also one or more specific Human Research Ethics Committee (HREC) in each jurisdiction. ALSWH submits applications to both of these, requesting approval to link ALSWH data. If approval is granted, the linkage is conducted and the linked dataset is stored with ALSWH.

To facilitate access to these linked datasets, ALSWH has negotiated agreements with Data Custodians and HRECs to allow third parties (e.g., collaborating researchers from other Centres/Institutions) to access the ALSWH linked datasets, subject to the conditions of the relevant Data Custodian/HREC. (These special arrangements are subject to periodic re-negotiation and review). This means that instead of an individual researcher having to make their own separate applications to Data Custodians and HRECs to use linked data held by ALSWH, they apply instead to ALSWH (by submitting an Expression of Interest (EoI)). If the EoI is approved, ALSWH will then follow the agreed data linkage access protocol (each dataset's Data Custodian may have a different protocol) to provide access to the linked dataset. Generally, amendments are lodged with relevant HRECs to add any new researchers who will be accessing linked data, and a listing, or progress report, of analysis projects is included in annual reports to the HREC. These arrangements only apply to secondary analysis projects. Substudies (projects which collect new survey data), or analysis projects which link with collections not covered by ALSWH, require individual approval (an amendment or separate protocol is submitted as appropriate).

**Table 5-1 External health record collections accessed under ALSWH (at August 2018)**

National	Collection	Cohorts				Last update	Coverage
		O 1921-26	M 1946-51	Y 1973-78	NY 1989-95		
Dept of Health	MBS/PBS	4	4	4	4	2016	MBS: 1996 - Dec 2015 PBS: 2002 - Dec 2015
Dept of Veterans' Affairs	R-MBS	4	4			2017	1996 - Dec 2016
	Aged Care <sup>B</sup>	4	4			2017	? - Dec 2016 (varies)
Australian Institute of Health and Welfare	Aged care <sup>B</sup>	4	4			2017	200? - Jun 2014 (most)
	National Death Index	4	4	4	4	2018	1996 - Nov 2017
	*Australian Cancer Database	4	4	4		*2018	See under states*, below
<b>State</b>							
NSW Health	Cancer	*	*	*		*	1994 - Dec 2012
	Hospital	4	4	4	4	2017	Mar 2001 - May 2017
	Perinatal			4	4		Jan 1994 - Dec 2015
ACT Health	Cancer	*	*	*		*	Aug 1996 - Dec 2013
	Hospital <sup>^</sup>	4	4	4	4	2015	Jul 2004 - Jun 2013
	Perinatal <sup>^</sup>			4	4	2018	Jan 1997 - Dec 2012
Queensland Health	Cancer	*	*	*		*	Jan 1982 - Dec 2013
	Hospital	4	4	4	4	2018	2002/2007 - Dec 2017
	Perinatal			4	4		2002/2007 - Dec 2017
Dept of Health, WA	Cancer	4*	4*	4*	4	2016	1971 - Jun 2016
	Hospital	4	4	4	4	2016	Jan 1970 - Dec 2015
	Perinatal			4	4		Jan 2002 - Dec 2015
	Emergency	4	4	4	4		Jul 1989 - Dec 2014
SA Health	Cancer	*	*	*		*	Mar 2001 - Dec 2013
	Hospital <sup>^</sup>	4	4	4	4	2018	Jan 2002 - Dec 2010
	Perinatal			4	4	2018	1986 - Dec 2015 available
Victorian Cancer Registry	Cancer	*	*	*		*	1957 - Dec 2013
Victorian DHHS	Hospital	□	□	□	□	-	2003 - ? available
Victorian Consultative Council on Obstetric & Paediatric Mortality & Morbidity	Perinatal			μ	μ		1962 - ? available Explicit participant consent is required due to the Victorian Public Health and Wellbeing Regulations 2009 (Section 10).
NT Health	Cancer	*	*	*		*	Jan 1991- Dec 2013
	Hospital <sup>^</sup>	□	□	□	□	-	2000 - Jul 2017 available
	Perinatal			□	□	-	1986 - Dec 2015 available
Tasmanian DH&HS	Cancer	*	*	*		*	1982 - Dec 2013
	Hospital <sup>^</sup>	□	□	□	□	-	2007 - 2016 available
	Perinatal <sup>^</sup>			□	□	-	2005 - 2014 available

<sup>4</sup> Linked data obtained

<sup>μ</sup> Application in progress

□ Data linkage/extraction in progress

<sup>B</sup> Biannual update schedule (we aim for annual updates for all other collections)

<sup>^</sup> Only public hospital data is available

\* State-based Cancer Registry data is sourced from the Australian Cancer Database at AIHW. The 1989-95 cohort will be included in 2019

## 5.1 Current linkages

Collections currently available are listed below; please see the web site for details of coverage and available data items (<http://www.alsw.org.au/how-to-access-the-data/external-linked-datasets>). From 2019, we aim to update all collections annually, with the exception of aged care data (due to the complex nature of these data, the linkage fees are considerable, as is the time and effort required to process the data on receipt by ALSWH).

### 5.1.1 National collections

- Medicare Benefits Schedule (MBS): All cohorts. Approval has recently been received from the Department of Health to extend coverage back to 1984 (earliest available records) rather than 1996 (start of ALSWH), in line with the other linked data collections accessed.

- Pharmaceutical Benefits Scheme (PBS): All cohorts, from 2002.

MBS and PBS Data are now being extracted and delivered directly by AIHW, however, there have been significant delays with this new process. We are currently waiting for updated data.

- National Death Index (NDI, from AIHW): All cohorts, from 1996.
- Cause of Death (CoD, from AIHW): All cohorts, from 1996.
- AIHW Pathways in Aged Care (PIAC) data: 1921-26 and 1946-51 cohorts.
- Department of Veteran's Affairs (DVA) Home Care services: 1921-26 and 1946-51 cohorts.
- Repatriation-MBS: 1921-26 and 1946-51 cohorts, from 1996. (Application will be made to extend coverage back to 1984, as for the main MBS collection). (Note that Repatriation-PBS data are included in the regular collection from the Department of Health.)
- DVA domiciliary aged care services: 1921-26 and 1946-51 cohorts only.

(Approximately 25% of the 1921-26 cohort and 1% of the 1946-51 cohort are eligible for DVA services).

### 5.1.2 State/Territory collections

Currently, ALSWH sources hospital and perinatal data directly from each state. However, as the AIHW works towards implementing the recommendations from the Australian Government Productivity Commission enquiry into Data Availability and Use (<https://www.pc.gov.au/inquiries/completed/data-access/submissions>), we expect some streamlining of access to state-based collections over the next few years.

All four ALSWH cohorts are included in data linkage for WA and Queensland. In NSW, ACT and SA, we currently only have linked data for the original three cohorts (the 1989-95 cohort will be included in the next update, due later this year or early in 2019).

- *Hospital Admissions*: As of mid-2018, we have approval to access Hospital Admissions data from every state. Note that some in some states (ACT, SA, NT, Tasmania) only public hospital data

is link-able. Data from Tasmania and NT are expected in the second half of 2018, along with an update from SA, which will now include waived and opt-out consenters (as in other states). Linked data from Victoria is also expected for the first time this year (previously not link-able). An update has also been requested from WA and is due late 2018/ early 2019. Linkage with the ACT collection was conducted in 2017, however, for internal policy reasons, ACT Health are not currently releasing any Hospital Admissions data to researchers.

- *Perinatal Data Collections*: Linked perinatal records are only sought for the 1973-78 and 1989-95 Cohorts. We will soon have complete coverage of state Perinatal data collections. These collections generally cover all births (including homebirths) except in the ACT and NT, where only Public Hospital births are link-able (in the case of NT, births in private facilities will be available from 2014 on). Data from SA, NT and Tasmania is expected to be delivered in August/September 2018. We have also applied for the Victorian Perinatal Collection (unavailable in the past). HREC approval was granted in July; we currently await approval from the custodians (the Victorian Consultative Council on Obstetric and Paediatric Mortality and Morbidity). Special requirements still apply to that Collection, for example, there is no provision for waived or opt-out consent.
- *Cancer Registries*: A single national update was received from the Australian Cancer Database (ACD, held by AIHW) in July 2018. Coverage is to December 2013 (except for NSW, where it is to 2012). The National Minimum Dataset is less current than the individual State Cancer Registries, and not all data items obtained in the past are necessarily included. However, it is administratively advantageous to receive the national dataset, which has been harmonised and de-duplicated. Sourcing data from the national collection also removes variability introduced as a result of separate probabilistic linkages performed at each state level (with different procedures and sensitivity of matching). State HREC and Data Custodian approvals still need to be maintained. Only the three original cohorts were included in the initial request; the 1989-1995 cohort will be added in the next update (2019, when records to December 2015 will be available).
- *Emergency Department* data was accessed from WA for the first time in 2016. The utility of these data is currently being assessed, before requesting comparable collections from other States.

### **5.1.3 Derived data**

Work is currently underway to make key indicator variables, derived from linked health record data, available to research collaborators. Harmonising and analysing linked data from multiple sources is a time-consuming task, especially as data sources may differ on coverage (type of hospital, time periods), linkage procedures (matching sensitivity), context of collection (funding and policy changes), and the variables supplied. There are frequently other important caveats around the use of the data. Considerable time and expertise is therefore required to produce valid and reliable results, with sufficient power to detect the effects in question. To streamline analysis, ALSWH is now offering derived variables to research collaborators, for example, fact of diagnosis for certain conditions, such as dementia (which may have been identified from ALSWH surveys or from one or more available linked

data sources). Current ethical requirements still apply to derived data – collaborators require HREC approval for all contributing datasets.

## 5.2 Security of data

ALSWH implements the following security procedures with regard to linked data:

- Data separation: participant contact data are stored separately (at the University of Newcastle) to the survey and linked data (held by University of Queensland).
- The Queensland Cyber Infrastructure Foundation (QCIF) at the University of Queensland provides secure data storage for large research datasets and ALSWH data are regularly backed up to this facility.
- Anonymisation and health record linkage are performed using standard procedures by dedicated Data Linkage Units approved by respective data custodians. The ALSWH Data Management Team have the expertise and resources to undertake required procedures to prepare and manage datasets at the Universities of Queensland and Newcastle.
- All analysis projects are conducted under the oversight of the ALSWH Data Access Committee (formerly the Publications, Sub-studies and Analyses Committee) to ensure that analyses are justified, feasible, and scientifically sound, and within the scope of current HREC approvals. Please refer to the ALSWH Data Access Protocol for further details - in summary:
  - ALSWH researchers and external research collaborators apply to use the data by submitting their proposed protocol as an Expression of Interest (Eoi). The Eoi form is available on the ALSWH web site (<http://www.alswh.org.au/how-to-access-the-data/alswh-data>).
  - Projects are initially approved by the Data Access Committee for a period of two years; extensions to this period may be approved upon formal application. The Data Access Committee requires annual progress reports from each project, and an amended Eoi must also be furnished for any changes.
  - Researchers must be approved by each relevant jurisdiction before being granted access to linked data from that source.
  - Approved researchers using linked data in statistical analyses are required to sign non-disclosure agreements. They only have access to de-identified datasets, supplied by the Data Manager under a new identifier, the 'Proj-ID', which is unique to each project. (This step prevents researchers from on-linking the data to any other ALSWH datasets they may be working with).
  - Datasets can only be accessed and used at The University of Queensland or the University of Newcastle, alternatively, collaborators based at other Institutions can apply

for access to de-identified datasets using the Secure Unified Research Environment (SURE; <https://www.saxinstitute.org.au/our-work/sure/>).

- External researchers who visit the main study sites (University of Queensland or University of Newcastle) to conduct their analyses adhere to the following procedures:
  - The research dataset is made available on a designated computer under the direct supervision of a responsible officer.
  - All visits are logged in the ALSWH Linked Data Access Log.
  - In no circumstances can the linked data be removed from the computer. Also, any variables derived from the linked data must not be removed. Only summarised analysis (aggregated data) can be removed.
  - The researcher can bring in any other files they wish on a USB device. The USB device can only be connected to the computer under supervision of ALSWH staff. At the end of the session results can be removed but not any of the linked data.
  - At the end of each session the researcher must sign that they adhered to the linked data usage agreement.
- Only aggregated, non-identifying data are reported or otherwise disseminated.

### **5.3 Current projects using linked data**

One hundred and fifteen projects using linked data have been approved to date, and the linked data has been reported in over 60 publications (journal articles and reports).

### **5.4 Legal and ethical considerations for health record linkage**

#### **5.4.1 Background**

ALSWH is bound by the Australian Privacy Act 1988 under its contractual obligations to the Commonwealth Department of Health, which funds the Study. The Universities of Queensland and Newcastle are also subject to privacy legislation in their respective States (which is substantially similar to the national legislation). Further, to ensure best practice on our own behalf, and to maintain the compliance of organisations from which ALSWH accesses linked health records, ALSWH must adhere to the following:

- [\*NHMRC Guidelines approved under Section 95 of the Privacy Act 1988\*](#) (November 2014)
- [\*Australian Privacy Principles \(APP\) guidelines\*](#) (2 March 2018) as well as Privacy principles operating in Australian States and Territories.

The Universities and the researchers conducting ALSWH are also ethically bound by:

- [\*NHMRC National Statement on Ethical conduct in Human Research 2007\*](#) (Updated May 2015; Chapters 2.2-3 and 3.2 are particularly relevant)
- [\*Australian code for the responsible conduct of research 2007\*](#) (Section 2).

The following may also apply to Commonwealth agencies disclosing health records to ALSWH:

- [Privacy public interest determination guide V1.0, June 2014.](#)
- [Privacy Guidelines for the Medicare Benefits and Pharmaceutical Benefits Programs Issued by the Privacy Commissioner under section 135AA of the National Health Act 1953](#) 6 March 2008, *Guideline 6: Disclosure of identifiable claims information for medical research purposes.*
- [Health Insurance Act 1973](#) (for MBS data).
- *Guidelines for the Release of Information where Necessary in the Public Interest*; approved by the Secretary, Australian Government Department of Health, in June 2003.
- [A Guide for Data Integration Projects involving Commonwealth Data for Statistical and Research purposes](#) National Statistical Service.

Data sourced from States and Territories is also subject to legislation in each jurisdiction, which may include Privacy Principles (or equivalent), specific Health Privacy Principles, and/ or a Public Health Act. In Victoria, the Public Health and Wellbeing Regulations 2009 (Section 10) specifically limit the release of Perinatal data by the Consultative Council on Obstetric and Paediatric Mortality and Morbidity. WA does not have specific privacy legislation, but ALSWH adheres to government practice codes and policies with regard to personal information.

ALSWH's Privacy Policy is available on the web site (<http://www.alswh.org.au/privacy-policy>) and is regularly updated. All researchers and collaborators accessing linked data are also subject to ALSWH Data Access Protocols (<http://www.alswh.org.au/how-to-access-the-data/external-linked-datasets>) as well as the Codes of Conduct and Privacy Policies of their home institutions. The University of Queensland and University of Newcastle Privacy Codes are:

- The University of Queensland Policy and Procedures library (<http://ppl.app.uq.edu.au/>), including: 1.60.01 Right to Information, 1.60.02 Privacy Management, 1.60.04 Records Management, 4.20 Research Conduct and Integrity, and 4.20.06 Research Data Management.
- The University of Newcastle Responsible Conduct of Research Policy (<https://www.newcastle.edu.au/research-and-innovation/resources/policies-procedures-and-codes/overview>) and Privacy Management Plan (<https://www.newcastle.edu.au/privacy>)

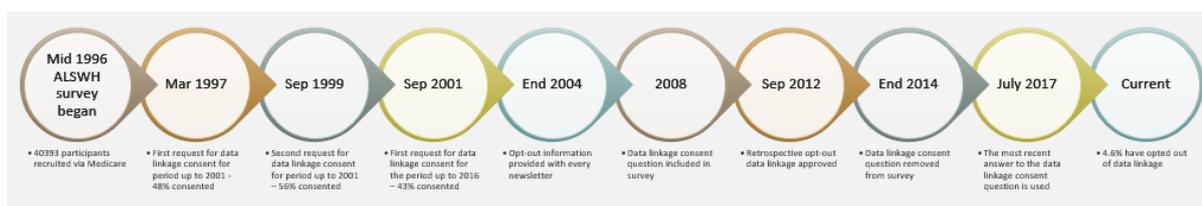
#### **5.4.2 Summary of ALSWH compliance with national guidelines**

Under the APP guidelines, Commonwealth agencies are prohibited from disclosing health records unless the individuals concerned have consented to the disclosure, or the individuals would reasonably expect the records to be disclosed, for a purpose directly related to the primary purpose of the collection (i.e. the provision of health care). However, a waiver of consent may be granted if the public interest in conducting the research outweighs the risk to participants. Similar provisions apply to data from most other jurisdictions. The following is a summary of ALSWH compliance with the legal and ethical requirements for health record linkage.

- **Public health benefits of ALSWH:** ALSWH explores factors that influence health among women who are broadly representative of the Australian population and is the largest project of its kind ever

conducted in Australia. ALSWH has been responsible for over 900 publications including peer-reviewed papers, reports, books and book chapters. ALSWH research has directly influenced Federal and State Government Policy in several areas (<http://www.alswh.org.au/publications-and-reports/policies-and-guidelines>).

- **Benefits to participants:** While there are no direct benefits to individuals from participating in health record linkage, the body of knowledge arising from the data will continue to contribute to the development of policies, services and interventions to improve the health and well-being of all Australian women, including ALSWH participants. As society's primary carers, benefits to women are likely to extend to their children and other family members.
- **Costs of not undertaking the research:** While this research has enormous potential to optimise public health expenditure and improve the health of the nation, we have not directly quantified the costs of not undertaking this research.
- **Minimisation of risks to participants:** The risk to ALSWH participants' privacy is low, because all reasonable steps are taken to protect their privacy during health record linkage, data analysis, and the dissemination of findings. ALSWH Investigators have the expertise and credentials to conduct the Study. The Study design is scientifically sound and has been approved by the responsible Institutional HRECs.
- **Consistency of data use by ALSWH with uses by the disclosing organisation:** ALSWH uses linked administrative health data to report on the health of population sub groups (women of various ages). This is consistent with the information ordinarily available directly from the agencies concerned, for example, population health statistical reports available online from Australian Government and State Health Departments. ALSWH maintains administrative health in a secure de-identified electronic format and publishes only non-identified aggregated data. The formats and use of the data are consistent with those of the agency, which collected the data, except that new identifiers are applied as part of the de-identified data linkage process.
- **Respect for Study participants:** ALSWH procedures (longitudinal surveys and health record linkage) are conducted with due respect for Study participants. ALSWH web site, annual newsletters, and Study materials provide participants with open transparent information about the purposes, outcomes and procedures of the research, including health record linkage and ALSWH's Privacy Policy. The retention of a high proportion of participants over 20 years of this Study (in the order of 60-80% among the 1973-78 and 1946-51 Cohorts) are evidence of ALSWH's respectful dealings with them and their level of commitment to our research.
- **ALSWH consent procedures:** During this study, ALSWH participants have been contacted regularly about health record linkage. From the late 1990's to the present day a number of procedures were implemented to obtain current and specific consent to such linkage. Figure 5-1 shows the history of data linkage consent in ALSWH.



**Figure 5-1 History of data linkage consent for ALSWH participants 1996-2018.**

ALSWH has assiduously sought express consent for health record linkage. This involved dedicated mail-outs (pre-2004) and repeated consent at each survey wave (2008-2014). However, the aim of health record linkage is to capture events over the entire course of longitudinal follow-up, not just at specific survey time-points. In order to reduce both participant burden and ambiguity of intention, ALSWH now operates an opt-out consent mechanism for health record linkage. Since 2004, ALSWH participants have been notified that the researchers may access information such as birth and death records, disease registers and hospital records, without seeking further participant consent. This notification has been included in newsletters, surveys and other communications with participants. At the same time, all participants have been notified that they may withhold consent for these linkages. ALSWH meets all ethical obligations with regard to opt-out consent, namely:

- The option, and information about its implications, are clearly presented in plain language and graphic formats, and are freely available. Since 2004, participants have been informed about opt-out consent in every newsletter.
  - Exercising the option requires no cost and little effort and may be done at any time. ALSWH free call telephone number and email are clearly presented on the web site and other communications.
  - Where possible, survey non-respondents are followed up by telephone to ensure that they receive Study materials. This also provides an extra opportunity for participants to seek clarification on any aspect of the Study.
  - The consequences of failing to opt-out attract minimal risk to privacy, given ALSWH's stringent data access and management procedures. Participants who opt-out of health record linkage may continue to contribute to survey data and are treated the same as other ALSWH participants.
  - Participants who opt-out are removed from all subsequent health record linkage requests and health record uses unless they opt-in later.
  - The capacity of respondents is considered, especially with regard to our oldest cohort. Where necessary or desired, a proxy or carer can complete survey follow up, and exercise the opt-out option on the participant's behalf.
- **Consent status of ALSWH participants:** Consent for health record linkage applies to all collections, apart from the National Death Index, which is conducted for all participants as an

integral part of longitudinal tracking. ALSWH operates bundled consent due to the number and complexity of the record collections involved. Participants are informed of details of the collections accessed via the ALSWH Privacy Policy (<http://www.alswh.org.au/privacy-policy>) which includes a link to the data page (<http://www.alswh.org.au/how-to-access-the-data/external-linked-datasets>). Table 5-2 shows the current health record linkage consent status of the cohorts. From July 2017, non-consenters (participants *excluded* from data linkage) are defined as:

- Participants whose *latest* answer to the data linkage questions is 'No' (previously we excluded women who had *ever* answered 'No');
- Participants who have explicitly opted out of data linkage by contacting ALSWH; and

Participants who have withdrawn from the project because of privacy, confidentiality or Medicare data linkage concerns.

**Table 5-2 Health record linkage: Consent status of ALSWH participants (July 2018)**

Cohort	Total participants	Expressly declined ('Non-consenters')	Express consent	Implicit/ waiver of consent
1921-26	12,432	353 2.8%	9,131 73.4%	2,948 23.7%
1946-51	13,715	752 5.5%	11,241 82.0%	1,722 12.6%
1973-78	14,247	737 5.2%	9,902 69.5%	3,608 25.3%
1989-95 <sup>1</sup>	17,010	17 0.1%	16,993 99.9%	N/A N/A
<b>TOTAL</b>	<b>57,404</b>	<b>1,859</b> <b>3.2%</b>	<b>47,267</b> <b>82.3%</b>	<b>8,278</b> <b>14.4%</b>

<sup>1</sup> Note that the 1989-95 cohort expressly consented on enrolment in 2012/13, therefore, qualified consent is not applicable.

- **Waiver of consent for the original three cohorts:** For HREC purposes, ALSWH participants lost to follow up, without having indicated their ongoing consent intentions, are covered by a waiver. In respect of participants who have died, deceased persons are not 'individuals' for the purposes of the APP guidelines, hence a waiver of consent is not technically required. However, in some States/Territories deceased persons continue to have privacy rights for up to 30 years. ALSWH applies the same privacy considerations to all participants, living or not, including maintaining their express wishes with regard to health record linkage. This includes the privacy of health information, which may impact on participants' relatives (for example, reproductive data, or information on heritable medical conditions). Participants recruited through the Health Insurance Commission (now Medicare) in 1996, were informed that ALSWH is funded directly by the Australian Government Department of Health, for the purpose of improving women's health and health care. Specific requests for consent were issued in 1997 and 1999 (for the period to 2001) and again in 2002 (for the period to 2016), however, despite mailed reminders and telephone calls, there were a number of non-respondents, and others were confused about why they were being asked to consent again. Therefore, in 2004 opt-out consent was introduced. It is not possible to obtain retrospective consent from women lost to follow-up or withdrawn before that time, as

they are either unable to be contacted or have specifically declined further contact. Less than five percent of the original ALSWH participants have declined health record linkage, under any mechanism, to date. There is therefore no known or likely reason for thinking that the participants, who are subject to the waiver, would not have consented.

- **Implications for research of omitting participants to whom the waiver applies:**

Omitting the individuals described above would severely compromise the scientific basis of the ALSWH research findings, for the following reasons:

- Inability to infer causality: As a longitudinal study, collecting linked data on a per-person basis at multiple time points and from multiple sources is integral to the research design. This design is able to establish the temporal sequence of health events and therefore make inferences about the causes of ill health, which would not be possible using de-identified information.
- Lack of generalisability: Participants who die or are otherwise lost to follow up during a study often differ markedly, on key health and demographic characteristics, from those who complete the study. Omitting these participants would create survivorship bias, and reduce the representativeness of the findings.

#### **5.4.3 Current HREC approvals for health record linkage**

Table 5-3 and Table 5-4 show current Human Research Ethics Committee (HREC) approvals for the ALSWH Data Linkage Project. The National Mutual Acceptance Scheme (<https://www.nhmrc.gov.au/health-ethics/national-approach-single-ethical-review/institutions-certified-ethics-review-processes>) aims to reduce duplication of coverage for cross-jurisdictional and/or multi-site projects. For ALSWH, the NSW Population Health Services Research Ethics Committee (NSW PHRSEC) covers data linkage in both NSW and Queensland, and Victorian (Hospital and Cancer) collections are being added to our ACT Health HREC protocol. We will continue to negotiate with HRECs and Data Custodians to reduce duplication wherever possible. Note that, due to the implementation of NMA, the Australian Government Department is now closing its HREC. We are currently liaising with the Department and our NMA-certified HRECs to determine which one will formally take carriage of the departmental datasets.

**Table 5-3 Health record linkage: Current HREC approvals - National**

<b>Ethics Committee</b>	<b>Reference</b>	<b>Date approved</b>	<b>Expiry date</b>	<b>Collection names</b>
University of Newcastle HREC (EC00144)	H-2011-03711	31/01/2012	31/12/2020	Covers ALSWH Data linkage Project
	H-2014-02462	07/08/2014	31/12/2025	Covers MatCH Phase 1 Substudy
	H-076-07953	26/07/1995	31/12/2030	Covers ALSWH Survey program, original cohorts
	H-2012-02564	08/08/2012	31/12/2032	Covers ALSWH Survey program, 1989-95 cohort
University of Queensland Medical Research Ethics Committee (EC00179)	2012000132	09/02/2012	31/12/2020	Ratification of 1
	2014001213	10/09/2014	31/12/2025	Ratification of 2
	2004000224	02/04/2004	31/12/2030	Ratification of 3
	2012000950	31/12/2013	31/12/2032	Ratification of 4
Australian Government Department of Health HREC (EC00106)	11/2008	23/10/2015	(31/12/2025) HREC closing August 2018.	Three original cohorts: Medicare Benefits Scheme (MBS), Pharmaceutical Benefits Scheme (PBS) and Aged Care datasets
	15/2012	11/11/2015		1989-95 cohort: MBS & PBS
Australian Institute of Health and Welfare HREC (EC00103)	EO2013/1/7	7/01/2013	31/12/2020	Pathways in Aged Care (PIAC), DVA, and Australian Cancer Database
	EO2014/3/110	31/10/2014	31/12/2030	National Death Index (NDI)
	EO2017/1/342	7/03/2017	31/12/2025	MatCH Phase 1 Substudy, child record linkage
Australian Government Department of Veterans' Affairs HREC (EC00460)	EO14/022	19/12/2014	none	DVA Aged Care data and Repatriation-MBS

Shaded cells show coverage of the ALSWH survey program, rather than the data linkage component.

**Table 5-4 Health record linkage: Current HREC approvals – State / Territory**

<b>Ethics Committee</b>	<b>Reference</b>	<b>Date approved</b>	<b>Expiry date</b>	<b>Collection names</b>
ACT Health HREC (EC00100)	ETH.6.13.14 85	01/07/2013	31/07/2021	ACT Admitted Patients Collection (Public Hospital) ACT Perinatal Data Collection ACT Cancer Registry
Cancer Council, Victoria HREC (EC00203)	HREC 1205 – requesting change to 5	10/05/2012	31/12/2021	Victorian Cancer Registry
Victorian Department of Health and Human Services	In process - requesting under 5			Victorian Admitted Episodes Dataset (VAED)
Austin Health HREC (EC00204)	HREC/18/ Austin/163	17/07/2018	none	Victorian Perinatal Data Collection (VPDC)
NSW Population and Health Services Research Ethics Committee (EC00410)	2011/11/357 6	03/01/2012	31/12/2020	NSW Admitted Patients DC (APDC) NSW Perinatal DC (PDC) NSW Cancer Registry
Department of Health WA HREC (EC00422)	2015/477	15/12/2015*	31/12/2018	WA Hospital Morbidity Data Collection WA Midwives Notification System WA Cancer Registry WA Emergency Department Information System (EDIS)
Queensland Health:  Qld Health Office of Health & Medical Research HREC (EC00334)  Qld Public Health Act 2005	HREC/11/QH C/32  H-2011-037111  2015/477  2011/11/357 6	21/10/2011 retired; subsequently covered by:  24/04/2014  06/12/2016  13/04/2018	31/12/2020	Queensland Hospital Admitted Patient DC (QHAPDC) Queensland Perinatal DC Queensland Cancer Registry
SA Health HREC (EC00304)	HREC/12/ SAH/91	14/06/2016*	31/12/2020	SA Public Hospital Separations

Ethics Committee	Reference	Date approved	Expiry date	Collection names
				SA Perinatal Statistics Collection SA Cancer Registry
Human Research Ethics Committee for the Northern Territory Department of Health and Menzies School of Health Research (EC00153)	2018-0371	16/04/2018	31/12/2021	NT Public Hospital Inpatient Activity NT Perinatal Trends NT Cancer Registry
Tasmania Health & Medical HREC (EC00337)	H0017192	19/04/2018	19/04/2022	Tasmanian Public Hospital Admitted Patient Collection Tasmanian Perinatal Data Collection Tasmanian Cancer Registry

## 6. Archiving

ALSWH data are annually archived at the Australian Data Archive (ADA) at the Australian National University. To date, data have been archived for Surveys 1 to 7 of the 1946-1951 cohort, Surveys 1 to 7 of the 1973-1978 cohort, Surveys 1 to 4 of the 1989-1995 cohort, Surveys 1 to 6 of the 1921-1926 cohort, and the incomplete data from the six-month follow up survey of the 1921-1926 cohort. This year, (2018) data from Survey 8 of the 1946-1951 cohort, Survey 5 of the 1989-1995 cohort and recent data from the six-month follow up survey of the 1921-1926 cohort have been archived.

### 6.1 Archiving Notes

In 2018, the following were deposited with ADA:

- Completed ADA licence form
- The ALSWH Data Dictionary in MS Access format.

The data archived for the 1921-1926 cohort consisted of:

- 1921–1926 cohort 6-month follow up survey level 'A' and 'B' analysis datasets in SAS format
- 1921–1926 cohort participant status file in SAS format

The data archived for the 1946-1951 cohort consisted of:

- 1946-1951 cohort Survey 8 questionnaire
- 1946-1951 cohort Survey 8 level 'A' and 'B' analysis datasets in SAS format
- 1946-1951 cohort Survey 8 formats and labels in text format for the analysis datasets
- 1946-1951 cohort Survey 8 list of variables in Excel format
- 1946-1951 cohort participant status file in SAS format

The data archived for the 1989-1995 cohort, Survey 5 consisted of:

- 1989-1995 cohort Survey 5 questionnaire
- 1989-1995 cohort Survey 5 level 'A' and 'B' analysis datasets in SAS format
- 1989-1995 cohort Survey 5 formats and labels in text format for the analysis datasets
- 1989-1995 cohort Survey 5 list of variables in Excel format

## 7. Methodological issues

### 7.1 Preparation of linked hospital data – a case study

*Author: Peta Forder*

#### 7.1.1 Introduction

Hospital admissions data are available from the states of New South Wales (NSW), the Australian Capital Territory (ACT), Western Australia (WA), South Australia (SA) and Queensland (Qld). However, the time period covered by hospital data is different for each state and use of the hospital data is restricted to eligible women only, according to the ALSWH consent processes which may differ across states and time.

In order to use the combined hospital data from the available states, a harmonisation process should be implemented to ascertain the relevant data for each state before joining the individual state datasets into a single hospital dataset. This process is outlined below for a recent specific project using data from women in the 1921-26 cohort.

***Case Study Example:*** Women from the 1921-26 cohort were used for an analysis investigating health service use in the last two years of life by women who died by end of 2015, with specified diagnosed index conditions (namely, chronic lung disease, heart disease and dementia). These women were known as 'cases'. For this case study, the selected cases will be women who had heart disease.

#### 7.1.2 Date coverage for each state

Each state provided hospital data with different time coverage. As the analysis required summary statistics (e.g. counts) on a monthly basis, incomplete data for leading or trailing months for each state dataset was ignored and not included for analyses. (Note: if a particular analyses required summary data for each calendar year, the incomplete data for the leading or trailing years should be similarly ignored and truncated.) The WA hospital data included data from 1971 to 2015. As the first survey for ALSWH was conducted in 1996, the WA hospital data was truncated to start from the 1<sup>st</sup> January 1996. The final time coverage for each state using complete months of data is presented in Table 7-1 below.

**Table 7-1 Time coverage (in complete months) and length-of-stay outliers for hospital data from each available state**

State	Start date	End date	Maximum Length Of Stay (LOS)	Number of records with LOS>180 days	Number of records with LOS>365 days
NSW	July 2001	Dec 2016	3558	51	37
ACT	July 2004	June 2013	64	-	-
Qld	July 2002	Dec 2011	745	3	1
SA	July 2001	June 2011	55	-	-
WA	Jan 1996	Dec 2015	1754	9	4

A management/analysis decision should be made in the beginning of the hospital data preparation about whether hospital data is restricted to the same time period coverage for each state. If the same time period coverage applies for each state, this will impact on the available 'exposure time' for the combined hospital data. In the example used here, it would mean that each of the state hospital datasets would be truncated to cover the time period from July 2004 to June 2011 only (see Table 7-1), substantially reducing the number of records available for analysis.

Using all of the available hospital data across states (as seen in Table 7-2), there were 42 records where the length of stay was greater than 365 days. It was decided that these records should be excluded from analyses as they do not represent a typical or expected hospital stay (Table 7-2). All types of admissions were included, including day stays.

**Table 7-2 Number of records of hospital data from each available state, after record exclusions**

State	Original number of records	Number of records after excluding records from incomplete months	Number of records with LOS>365 days	Number of records after excluding records with LOS>365 days
NSW	41896	41607	37	41572
ACT	683	683	-	683
Qld	10337	10326	1	10325
SA	2493	2491	-	2491
WA	17574	12701	4	12696

### 7.1.3 Eligibility for women for hospital linkage, according to state time period

For the example analysis, each 'case' had a two-year time period preceding their death, and this index time period was the focus of the analysis. Cases were considered eligible for hospital linkage analysis if their individual two-year time period fell within the date coverage for a particular state's hospital dataset. The number of eligible heart disease cases used in the analysis of hospital use is presented in Table 7-3, according to their state of residence at Survey 1.

**Table 7-3 Number of women (eligible heart disease cases) with hospital data, according to state of residence at Survey 1**

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT
All women	4745	3309	2511	386	1104	490	10	58
Eligible for linkage	4003	-	1384	127	1104	-	-	28
Cases	1447	-	496	44	392	-	-	11

### 7.1.4 Issues to consider when using hospital data before the analysis starts

Users of linked hospital data need to consider the following before they commence analysis of hospital data

- Do you want to use hospital data from all available states or focus on one state only?  
If using one state only, the recommendation would be to use NSW hospital data as this is the state with the highest number of participants.
- If you wish to use hospital data from all available states,
  - How do you choose to harmonise the different times periods?
  - How do you choose to harmonise the consent status from each state?

## 7.2 Identifying records of dementia among participants in the 1921-26 cohort of the Australian Longitudinal Study on Women’s Health: Update of methods and inclusion of additional data sources

*Author: Michael Waller*

ALSWH data has been used to estimate the prevalence and incidence of dementia using both self-reported and linked datasets. A dementia field which indicates whether the participant has a dementia record, with a corresponding date estimate, can now be requested by researchers. The methods used to identified records of dementia have been further refined after the initial publication of dementia estimates in Waller, Mishra and Dobson (2017).

### 7.2.1 Self-reported data:

The self-reported questions which ask directly about dementia are presented in Table 7-4.

**Table 7-4 Self-reported questions on doctor diagnosed dementia**

Dementia	
Survey 2: In the last 3 years have you been told by a doctor that you have: <ul style="list-style-type: none"> <li>• Alzheimer's Disease or Dementia</li> </ul>	Yes/No
Survey 3: In the last 3 years have you been diagnosed with or treated for: <ul style="list-style-type: none"> <li>• Alzheimer's Disease or Dementia</li> </ul>	Yes/No
Survey 4: In the last 3 years have you been diagnosed with or treated for: <ul style="list-style-type: none"> <li>• Alzheimer's Disease or Dementia</li> </ul>	Yes/No
Survey 5: In the last 3 years have you been diagnosed with or treated for: <ul style="list-style-type: none"> <li>• Alzheimer's Disease or Dementia</li> </ul>	Yes/No
Survey 6: In the last 3 years have you been diagnosed with or treated for: <ul style="list-style-type: none"> <li>• Alzheimer's Disease or Dementia</li> </ul>	Yes/No

A field located at the end of each survey asks: What was the main reason for your needing help to fill in this survey/the participant did not fill in the survey herself? Free text from these questions was examined for records which mentioned dementia in the ALSWH participant (as opposed to their spouse or other family member).

In the most recent dementia analyses, free text responses from all surveys (including the 6-monthly follow-up surveys which began in 2011) have been examined for text related to dementia (in the index respondent).

### 7.2.2 ALSWH participation database

A participant management database is maintained by ALSWH staff, where reasons for study withdrawals are recorded in free-text fields. Records of dementia from this participant database have now been incorporated into the dementia datasets.

### 7.2.3 International Classification of Disease Codes

Records of dementia in the Admitted Patients Hospital Datasets and the Cause of Death data are recorded using ICD codes. The ICD10 codes presented in Table 7-5 have been used to identify records of dementia in the most recent analyses. No records of dementia in this cohort were identified using the corresponding ICD9 codes.

**Table 7-5 ICD 10 codes used to identify women with heart disease, chronic lung disease, stroke and dementia**

ICD10/9 code	Cause of death
<b>Dementia</b>	
F00	Dementia in Alzheimer's disease ( <i>this code is not recorded in the dataset</i> )
F01	Vascular dementia
F03	Unspecified dementia
G30	Alzheimer's disease

### 7.2.4 Department of Veterans' Affairs data

For the most recent analyses, aged-care data from the Department of Veterans' Affairs is now available. Veterans' Home Care (DVA HC) is a program provided by the Department of Veterans' Affairs to enable eligible clients to remain living in their home by providing a small amount of practical help. DVA HC Assessment Agencies assess client needs and approve services if appropriate. In the DVA HC dataset the following question was used to identify records of dementia.

Question: Has there been a medical diagnosis of dementia? Answer = Yes

### 7.2.5 Summary

Previously, women with dementia had been identified using record linkage based on ALSWH self-reported data, aged care assessments, death certificates, hospital records, and Medicare (MBS and PBS) data.

The process of identifying records of dementia in the ALSWH study has now been updated as follows:

1. Free text data from surveys 1 to 6 and the 6 monthly surveys of the oldest old are now searched for records of dementia
2. The ALSWH participant management database is now searched for records of dementia
3. The DVA Home Care dataset is now used to identify records of dementia
4. The ICD10 codes used to identify dementia records in the cause of death and admitted patients hospital datasets are F01, F03, and G30

### 7.2.6 References

Waller M, Mishra GD, Dobson AJ. Estimating the prevalence of dementia using multiple linked administrative health records and capture-recapture methodology. *Emerging Themes in Epidemiology*, 2017, 14:3.

## 7.3 Rosenberg Self Esteem scale

*Author: David Fitzgerald*

The Rosenberg Self Esteem Scale was used in the 1989-95 cohort Survey 5. This scale measures self-esteem or 'a person's overall evaluation of his or her worthiness as a human being' (Rosenberg, 1979, quoted in Schmitt and Allik, 2005). The scale ranges from 0 to 30 with higher values showing higher self-esteem.

The Rosenberg Self Esteem scale, RSES, had not been used in other ALSWH surveys until Survey 5 of the 1989-95 cohort. The RSES has been used in 53 nations and translated into 28 languages (Schmitt and Allik, 2005). Schmitt and Allik (2005) state that the RSES is the most widely used measure of self-esteem globally and explain its popularity is because of 'its long history of use, its uncomplicated language and its brevity.'

### 7.3.1 Description of the Rosenberg Self Esteem scale Measure:

"A 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. The scale is believed to be uni-dimensional. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree." (Rosenberg et al, 1965)

The RSES question ordering in the ALSWH survey followed that of the online Rosenberg Self Esteem Scale scoring tool <https://www.wwnorton.com/college/psych/psychsci/media/rosenberg.htm>. This was not the order used in the original paper by Rosenberg in 1965. Table 7-6 below shows the items as they appeared in the ALSWH survey along with Rosenberg's original ordering which was not shown on the survey.

**Table 7-6 Rosenberg Self Esteem Scale questions in the ALSWH survey with original Rosenberg (1965) ordering**

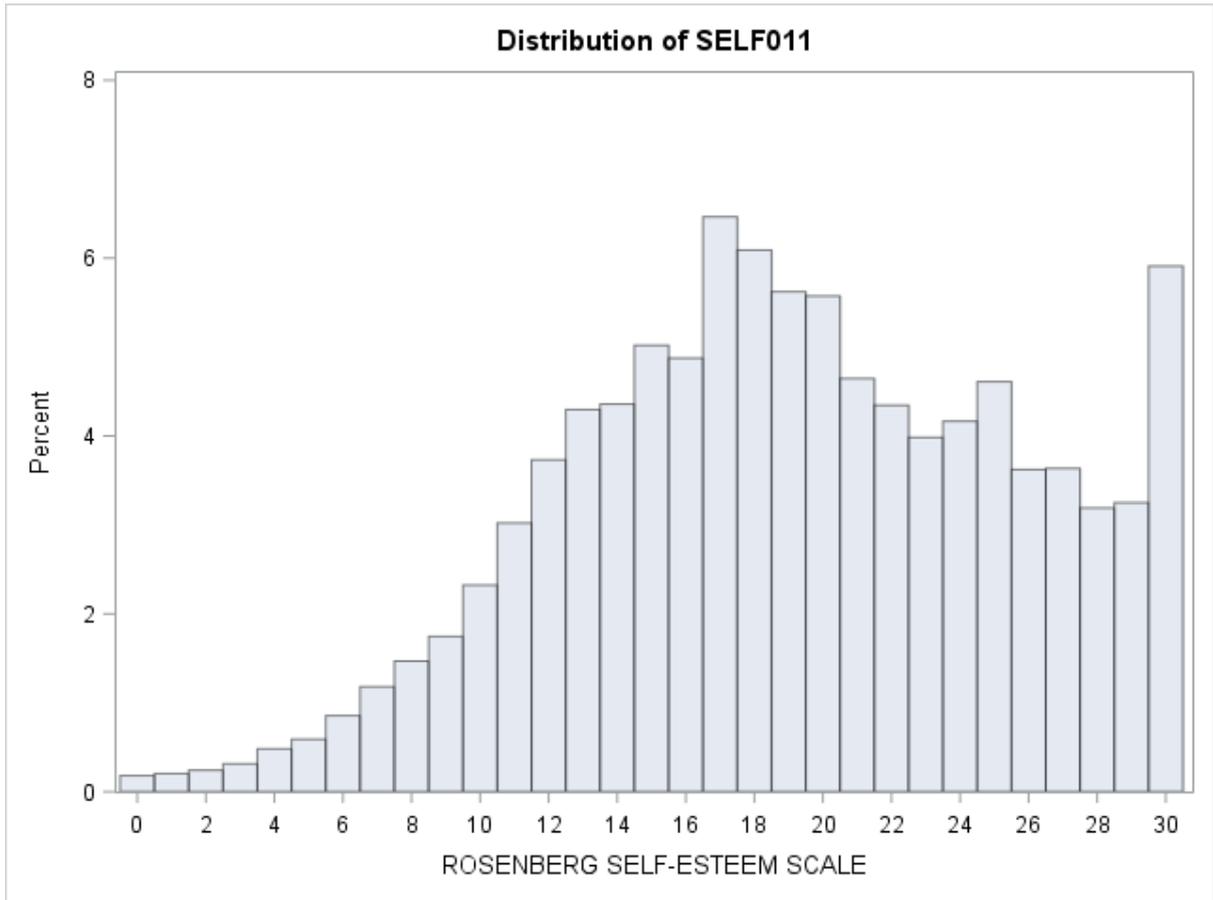
Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement. *(Mark one only)*

	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>	<b>Original Order, Rosenberg (1965)</b>
I feel that I'm a person of worth, at least on an equal plane with others (SELF001)					7
I feel that I have a number of good qualities (SELF002)					3
All in all, I am inclined to feel that I am a failure (SELF003)					9
I am able to do things as well as most other people (SELF004)					4
I feel I do not have much to be proud of (SELF005)					5
I take a positive attitude toward myself (SELF006)					10
On the whole, I am satisfied with myself (SELF007)					1
I wish I could have more respect for myself (SELF008)					8
I certainly feel useless at times (SELF009)					6
At times, I think I am no good at all (SELF010)					2

Strongly agree was coded 3, agree was coded 2, disagree was coded 1, and strongly disagree was coded 0, with the scores reversed for the negatively worded items (SELF003, 005, 008, 009 and 010).

The scale was only calculated when all the 10 items were answered, that is, there were no missing responses. The scale has a maximum range from 0 to 30, and higher scores indicate higher self-esteem.

Figure 5-1 shows the RSES distribution at Survey 5. There was a centring around value 17 and it steadily dropped below 17 down to 0 which had very low frequency. The distribution dropped more slowly above the 17 value and then had a second high point at the maximum value of 30.



**Figure 7-1 Distribution of Rosenberg Self Esteem Scale in Survey 5 1989-95 cohort**

**Table 7-7 Numerical Summary of Rosenberg Self Esteem Scale in Survey 5 1989-95 cohort**

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
0	15	19	24	30

Self-reported general health is the first item in the SF-36 scale and by itself it is a good indicator of health. (Bowling, 2005). The five self-reported health scales were Excellent, Very good, Good, Fair, Poor. Bowling (2005) wrote that the SF-36 self-reported general health item:

‘A substantial body of international research has reported the item to be significantly and independently associated with specific health problems, use of health services, changes in functional status, recovery from episodes of ill health, mortality, and sociodemographic characteristics of respondents.’ (Bowling, 2005)

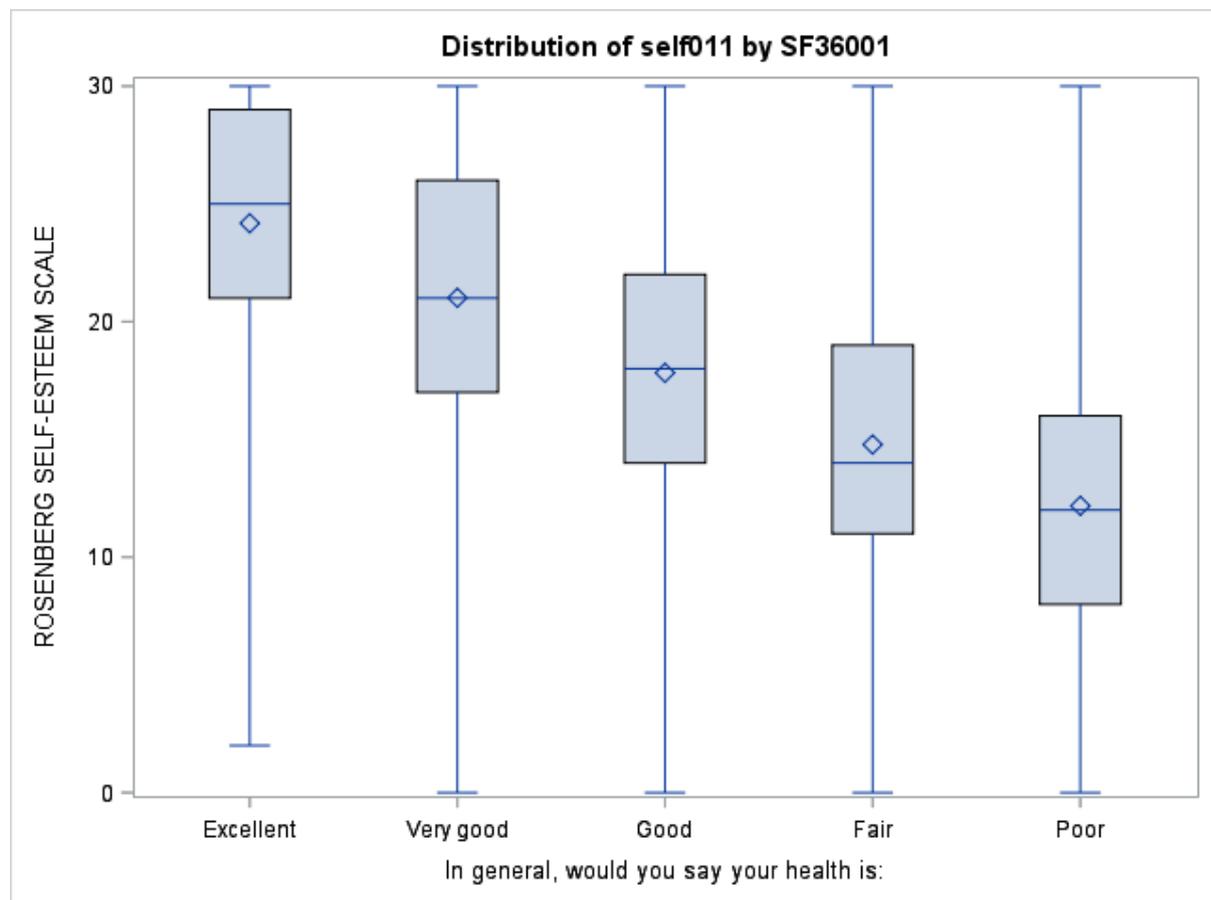
Table 7-8 shows a simple analysis done with of the RSES and the five responses of SF-36 self-reported general health.

**Table 7-8 Median Rosenberg Self Esteem Scale scores by self-reported general health in Survey 5 of the 1989-95 cohort**

Rosenberg Self Esteem Scale			
	Median	Interquartile Range	N
Excellent	25	8	771
Very good	21	9	3170
Good	18	8	3126
Fair	14	8	996
Poor	12	8	244

The women in each of the self-reported general health categories all had a median RSES scale below the next higher category, as can also be seen in the box plots (Figure 7-2). There were many women in each category and the interquartile ranges were very similar in each category. This very simple analysis suggests the survey RSES scores were not giving unusual results but more detailed analyses should be performed.

**Figure 7-2 Box plots of Rosenberg Self Esteem Scale by general health categories**



### 7.3.2 Code for deriving the Rosenberg Self Esteem Scale

Here is the SAS code used to derive the Rosenberg scale, SELF011.

```
** Calculate Rosenberg Self Esteem scale, SELF011 ** ;
** reverse all the Rosenberg items, since ALSWH changed the order ** ;
array alswhrosen (10) self001 - self010 ;
array rosen (10) rosen001 - rosen010 ;
do i = 1 to 10 ;
    rosen(i) = 5 - alswhrosen(i) ;
end ;

** reverse, again, the negative Rosenberg scales items ** ;

rosen010 = 5 - rosen010 ; ** 2 in original Rosen list ** ;
rosen005 = 5 - rosen005 ; ** 5 in original Rosen list ** ;
rosen009 = 5 - rosen009 ; ** 6 in original Rosen list ** ;
rosen008 = 5 - rosen008 ; ** 8 in original Rosen list ** ;
rosen003 = 5 - rosen003 ; ** 9 in original Rosen list ** ;

if nmiss(of rosen (*) ) > 0 then SELF011 = . ;
else SELF011 = rosen001 + rosen002 + rosen003 + rosen004 + rosen005 + rosen006 + rosen007 +
rosen008 + rosen009 + rosen010 - 10 ;
drop rosen001 - rosen010 ;
** subtract 10 to get the scale from 0 to 30 ** ;
```

### 7.3.3 References

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- Schmitt DP & Allik J. (2005). [Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: Exploring the universal and culture-specific features of global self esteem](#). *Journal of Personality and Social Psychology*, 89, 623-642.

## **7.4 Security issues**

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In order to maintain trust with our participants and the data custodians of the non-ALSWH survey data that we hold, it is important that we keep our data secure and also that we show that we do. This article explains some useful methods that are used for keeping data secure. These were presented at the 2018 ALSWH face-to-face meeting for all ALSWH staff. Security needs to be both physical and electronic.

### **7.4.1 Physical security**

Anyone accessing a logged-on ALSWH computer can access the data on the computer. All staff are advised to lock their offices when absent even for a short time, however, not all offices have any external barriers to access. Furthermore, confidential records must not be left lying around. Even a locked door is not totally secure since other people can have access and so all confidential records need to be locked up when not in use.

### **7.4.2 Electronic access**

Confidential data are stored in secure password protected areas on the computer networks and only those staff who need access have access. All individual workstations and laptops are password protected and password are not shared with anyone else. Staff are instructed to activate a screen saver password so that when they are away the computer will lock automatically. They are also instructed to lock the screen when leaving the computer, using the Win L key strokes. Staff should use strong passwords that are not easily guessed and use a password manager if they have difficulty remembering passwords.

Staff must not store passwords on browsers. Browsers often offer to save passwords but this is poor security because it is a trivial exercise for anyone to view the saved passwords they get access to your computer. Staff using laptop are recommended to use whole disk encryption because if anyone gets possession of the laptop they could defeat the logon password and access the hard disk directly.

## **8. Major Report: From child care to elder care: Findings from the Australian Longitudinal Study on Women's Health**

The ALSWH major report for 2018 used ALSWH data to examine informal caregiving by Australian women across the life course.

The provision of informal care (that is, unpaid care) to another person is an important and often significant part of women's lives. Statistics from Australia and countries across the OECD show that over two-thirds of primary caregivers, and over half of all caregivers, are women. In Australia, the economic value of informal care in 2015 was estimated to be over \$1 billion per week.

For many women, caregiving roles and responsibilities occur at multiple points along the life course, with these life course variations largely driven by relationships between and within generations. For example, women may care for their own children and grandchildren, care for parents, other family members or friends, and in later decades, care for spouses or partners. Women can provide primary, often higher intensity, care for people living with them or secondary, often lower intensity, care for people living elsewhere. Women often transition in and out of caregiving roles while managing other responsibilities, for example, employment and family life.

The 2018 report presents an analysis of the patterns of caregiving by Australian women across the life course using data from women aged from 18 to 97 years, the socio-demographic factors associated with caregiving patterns, and the impact of caregiving on social, employment and health outcomes of caregivers including their health service use. Both quantitative and qualitative data from the ALSWH cohorts were used. A summary of key points is presented here.

### **Provision of care to children in young adult life: Women in the 1973-78 cohort**

While less than 10% of women aged 18 to 23 in 1996 had at least one child, by the time they were 31 to 36 years, 79% of women had at least one child. When aged 28 to 33 years, 75% of women used informal and/or formal child care with this percentage dropping to 60% by the ages 37 to 42. Child care use, particularly informal child care, was highest in women who were working (either part-time or full-time) and those with higher levels of education. The percentages of women who used informal child care were similar amongst those who lived in major cities, and inner and outer regional areas with those in remote areas being the least likely to use this type of care. Use of formal and informal care was similar regardless of how well women reported managing on their income.

The majority of women using formal child care considered it to be convenient and available when aged 37 to 42 years. The convenience and availability of formal child care was perceived to be more of a problem by women who did not use formal child care than by women who did. One-third of women using formal child care reported that the cost of this service was a problem. Higher socio-demographic status was associated with the perception that formal child care was more conveniently located and affordable. Overall, the majority of women experienced high levels of satisfaction with their child care arrangements and were happy with their share of child care activities.

In an analysis of the women's own words (free-text comments), flexible employment conditions were important to facilitate returning to paid work for women after having children. However, a better understanding of the types of flexibility that are most useful would be helpful. Some women felt the cost of formal child care negated their potential earnings. An investigation into the costs to families and the economy of this lost productivity would be useful, in order to more fully understand the benefits of high quality affordable child care. Alternatives to formal child care include care by family members and social support networks. However, these are not available to all women. Further investigation of social support, child care and paid employment could illuminate the value of social networks to women with children. Furthermore, support for building networks to assist with child care could provide an affordable alternative to parents who wish to undertake paid work.

### **Provision of care to children in mid-age and later life: Women in the 1946-51 and 1921-26 cohorts**

The percentage of women in the 1946-51 cohort who provided care for their grandchildren or other people's children steadily increased up to 60% by the time they were 62 to 67 years. Women in the 1946-51 cohort who worked full-time or had a university degree were less likely to provide care than women not in the labour force or with lower educational attainment. Women who found it impossible or very difficult to manage on their income were more likely to provide daily child care compared with women who found it easiest to manage on income.

The percentage of women in the 1921-26 cohort who provided child care steadily decreased from 45% when they were aged 73 to 78 to 12% when they were aged 85 to 90. In this cohort, women who had better self-reported health were more likely to provide child care than women who reported their health as being fair or poor.

### **Provision of care to somebody because of their long-term illness, disability or frailty in mid-age: Women in the 1946-51 cohort**

Provision of care for somebody because of their long-term illness, disability or frailty was highest in women in the 1946-51 cohort (who were aged between 45 and 72 years across eight successive surveys). Over the surveys, between 24 and 30% of these women reported caring for another person. There was a high degree of movement into and out of caregiving over time, with only 4% of women providing this care at every survey. As these women aged, the percentage who cared for someone they lived with increased while the percentage who cared for someone they did not live with decreased after 2004 when they were aged 53 to 58 years. Of the caregivers living with the person they cared for, most were not in the labour force and had less education. Caregivers living with the person they cared for also reported more difficulty managing on their income than non-caregivers.

There was no difference in the percentage of caregivers among women living in major cities, regional, or remote areas.

Table 8-1 below shows a summary of the most common associations between intensity of caregiving, age of caregiver, relationship between caregivers and care recipient, location of the care recipient and

conditions of the care recipient. For example, the table shows that high intensity caregiving was most often provided by women when they were aged 56 to 67 (across Surveys 5 to 7) and that this care was usually provided to a spouse/partner who lived with the women and who had a serious medical issue like a mental health condition or cancer.

**Table 8-1 Associations between intensity of caregiving, age of caregiver, relationship between caregivers and care recipient, and location and conditions of the care recipient.**

<b>Intensity level</b>	<b>Most prevalent ages</b>	<b>Most prevalent type of care recipient</b>	<b>Most prevalent location of care recipient</b>	<b>Most prevalent condition/s of care recipient</b>
<b>Low:</b> <i>caregiving once per week for one hour at a time; or every few weeks for several hours at a time</i>	53-64 years	Sibling/sibling-in-law Friend Neighbour	Lives elsewhere to caregiver	Frailty in old age Visual impairment Alzheimer's disease/dementia
<b>Medium:</b> <i>caregiving several times per week for several hours at a time; or every day for about an hour</i>	53-64 years	Parent/Parent-in-law Child Grandchild	Lives elsewhere to caregiver	Frailty in old age Visual impairment
<b>High:</b> <i>caregiving all day, several times a week, or every day for several hours at a time</i>	56-67 years	Spouse/partner Child	Lives with caregiver	Mental health problem Heart condition Alzheimer's disease/dementia Cancer Respiratory condition Stroke

Overall, the majority of women in the 1946-51 cohort who provided care (66-81%) were happy with their share of caregiving activities and approximately 10% reported at each survey that they would prefer another arrangement.

**Provision of care to somebody because of their long-term illness, disability or frailty in early adult life: Women in the 1973-78 cohort**

When aged in their 20s and 30s about 6% of women in the 1973-78 cohort provided care for other people, with this prevalence increasing as the women entered their 40s. Similarly to women in the 1946-51 cohort, those caring for other people had poorer socio-demographic status than non-caregivers and those caring for someone who lived elsewhere. No particular trend for caregiving intensity was found in women born in 1973-78 when they were in their mid-30s to early 40s (the question about caregiving intensity was only asked in Surveys 6 and 7 of this cohort).

### **Provision of care to somebody because of their long-term illness, disability or frailty in later life: Women in the 1921-26 cohort**

In the 1921-26 cohort, the percentage of women who were caregivers peaked when they were aged 76 to 84 years before sharply decreasing. In contrast to the 1973-78 and 1946-51 cohorts, there were no differences in socio-demographic indicators between caregivers and non-caregivers. Low and medium intensity care was provided by caregivers in the 1921-26 cohort who did not live with the person they cared for. High intensity care was provided by caregivers who lived with the person they cared for.

### **Factors influencing transitions in caregiving**

A summary of previously published research using data from the ALSWH revealed insights into caregiving transitions in women in the 1973-78 and 1946-51 cohorts. In the 1946-51 cohort, women who provided care when aged 47 to 55 had lower engagement in the labour force compared with non-caregivers, which is possibly due to their poorer health status and greater use of health services. As women aged from their early to late 50s, the percentage of women who provided care increased and, simultaneously, participation in paid employment decreased. Transition into caregiving was not influenced by the number of hours of paid employment undertaken prior to caregiving, however once caregiving commenced, women in the 1946-51 cohort subsequently reduced their hours of employment.

In the 1973-78 and 1946-51 cohorts, women who provided continuous caregiving over time had poorer socioeconomic indicators at baseline; no other socioeconomic or health-related associations were apparent for other types of caregivers or non-caregivers. Turning points in the percentage of different types of caregiving over time by women in the 1946-51 cohort suggest that the women were engaging in a new type of caregiving behaviour, or that factors that influence the decision to be a caregiver had changed.

### **Caregiving and health, health behaviours and health service use**

Overall, women in the 1946-51 cohort who provided care for somebody who lived with them reported poorer health, health behaviours and greater health service use when compared to caregivers who did not live with the person they cared for or non-caregivers, namely, they:

- had poorer self-reported health
- were more likely to be less physically active, to smoke and be obese
- had poorer adherence to guidelines for fruit intake
- were less likely to adhere to pap test recommendations
- reported three or more chronic conditions
- had higher levels of stress, anxiety and depression
- had more visits to the general practitioner and a higher number of prescriptions filled.

Similar findings were found for women in the 1973-78 cohort. Women living with the person they cared for had poorer health and health-related behaviours, and greater use of health services than women

caring for someone living elsewhere and non-caregivers. There was however no difference between caregivers and non-caregivers for specific lifestyle behaviours such as smoking, drug use, alcohol consumption and adherence to dietary guidelines.

For women in later life, a different pattern emerged likely reflecting that at these later life stages, only women who were in good health were able to provide care for others. Caregivers aged 79 to 84 and not living with the person they cared for had better self-rated health and were more physically active than live-in caregivers and non-caregivers. Caregivers who lived with the person they cared for were more likely to be obese than caregivers who lived elsewhere and non-caregivers. There were no differences in self-reported anxiety and depression, and MBS service use between caregivers and non-caregivers. Amongst the women aged 79 to 84 years, non-caregivers were the most likely to require help with their own daily tasks, followed by live-in caregivers, and caregivers living elsewhere.

An analysis of the women's own words (free-text comments) revealed that ensuring they have sufficient personal and emotional care when they become widowed is essential to their ongoing health and ability to live independently. Formal and informal care assists women to not only care for their husbands but also for themselves. Most women reported being able to access the care they required. Many women reported the desire to remain independent and in their own homes as long as possible, and ensuring that there are services available to facilitate this is important. As most women reported that the person they cared for was their spouse, some caregiving burden for these women, who are also in need of assistance, could be alleviated by a coordinated approach. This might include a couple's care plan, rather than individual care plans, potentially provided by different administering bodies (e.g., DVA and State-based community services).

### Caring for multiple generations and ‘sandwich’ caregiving

Many women who provide care do so for more than one person. In the 1973-78 cohort, about 11% of women with children were also caring for another person who was ill, disabled or frail when they were aged 37 to 42. A larger percentage of women in the 1946-51 cohort were providing care for multiple generations (25% at Survey 8, when the women were aged 67-72), while 10% of women in the 1921-26 cohort (when aged 79-84 years) provided care for more than one generation. Associations between providing multi-generational care were influenced by whether the women lived with the person they cared for or elsewhere. A summary is presented in Table 8-2.

**Table 8-2 Associations between women in the 1973-78, 1946-51 and 1921-26 cohorts who provided multi-generational care and varied socio-demographic and health indicators**

Cohort	Socio-demographic indicators	Health indicators
1973-78	If lived with care recipient - more likely to have more than 3 children	If lived with care recipient – more inactive, depression, higher stress
1946-51	If lived with care recipient – more likely to also provide daily care for grandchild	If lived with care recipient - more inactive, depression, higher stress, poorer self-rated health, more visits to the GP
1921-26		If lived with care recipient - poorer self-rated health, fewer visits to the GP If lived elsewhere to care recipient – higher physical activity

*Note:* In this table care recipient refers to someone who is ill, disabled or frail.

In an analysis of the women’s own words (free-text comments from women in the 1946-51 cohort), more accessible and affordable child care options for parents returning to work may reduce the burden on grandparents of caring for their grandchildren. More research is needed to investigate the impact of long-term multigenerational caregiving among those who are reaching retirement age, and who are experiencing their own age-related health issues. While child care and respite care may be available to caregivers, these are rarely, if ever, offered as a coordinated support service. The complex support needs of caregivers in this position warrant assessment at the individual level.

## 9. DISSEMINATION OF STUDY FINDINGS

### 9.1 Publications

#### Published papers

Adane A, Dobson A, Tooth L & Mishra G. **Maternal preconception weight trajectories are associated with offsprings' childhood obesity.** *International Journal of Obesity*, 2018; 42: 1265-1274.

Adane A, Mishra G & Tooth L. **Maternal preconception weight trajectories, pregnancy complications and offspring's childhood physical and cognitive development.** *Journal of Developmental Origins of Health and Disease*, 2018; doi: 10.1017/S2040174418000570.

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Chojenta C, Byles J, Nair & BK. **Rehabilitation and convalescent hospital stay in New South Wales: An analysis of 3,979 women aged 75+.** *Australian and New Zealand Journal of Public Health*, 2018; 42(2):195-199.

Cordier R, Brown T, Clemson L & Byles J. **Evaluating the longitudinal item and category stability of the SF-36 full and summary scales using Rasch Analysis.** *BioMed Research International*, 2018; Art. ID: 1013453. <https://doi.org/10.1155/2018/1013453>.

Curryer C, Gray M & Byles JE. **Back to my old self and life starting: Biographies of ageing in Beck's risk society.** *Journal of Sociology*, 2018; 52(2): 249-263.

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Melka AS, Chojenta C, Holliday L & Loxton D. **Predictors of electronic cigarette use among young Australian women.** *American Journal of Preventive Medicine*, 2018.

Mishra GD, Moss K, Loos C, Dobson AJ, Davies PSW, Loxton D, Hesketh KD, Koupil I, Bower C, Sly P, & Tooth L. **MatCH (Mothers and their Children's Health) Profile: offspring of the 1973-78 cohort of the Australian Longitudinal Study on Women's Health.** *Longitudinal and Life Course Studies*. *Longitudinal and Life Course Studies*, 2018.

Pandeya N, Huxley RR, Chung HF, Dobson AJ, Kuh D, Hardy R, Cade JE, Greenwood DC, Giles GG, Bruinsma F, Demakakos P, Simonsen MK, Adami HO, Weiderpass E & Mishra GD. **Female reproductive history and risk of type 2 diabetes: A prospective analysis of 126,721 women.** *Diabetes, Obesity & Metabolism*, 2018.

Peeters GME, Beard JR, Deeg DJH, Tooth LR, Brown WJ & Dobson AJ. **Longitudinal associations between lifestyle, socio-economic position and physical functioning in women at different life stages.** *European Journal of Ageing*, 2018.

William J, Chojenta C, Martin MA & Loxton D. **An actuarial investigation into maternal out-of-hospital cost risk factors for public patients.** *Annals of Actuarial Science*, 2018.

Wilson LF, Pandeya N, Byles J & Mishra GD. **Hysterectomy status and all-cause mortality in a 21-year Australian population-based cohort study.** *American Journal of Obstetrics & Gynecology*, 2018.

Xu X, Mishra G, Dobson A, Jones M. **Progression of diabetes, heart disease, and stroke multimorbidity in middle-aged women: a 20-year cohort study.** *PLOS Medicine*, 2018.

### Published Book Chapter

Beard JR, Pot AM & Peeters G. **Implications of population ageing for societies and governments.** Michel JP, Beattie BL, Martin FC & Walston J. (Eds.). *Oxford Textbook of Geriatric Medicine, 3rd edition*. 2018, 77-81, Oxford, Oxford University Press

## 9.2 Conference Presentations

Byles J. **Housing for older Australians: Changing capacities and constrained choices.** *International Ageing Urbanism Colloquium*, Singapore University of Technology and Design, 26-27 October 2017, Singapore.

Byles J. **Ageing colloquium.** *Audiology Australia Annual Western Australian Chapter Conference*, 10 November 2017, Perth, WA, Australia.

Byles J. **Women's work: A lifecourse approach to women, work and caring.** *AAG Annual Conference – Ageing: The golden opportunity*, 7-10 November 2017, Perth, WA, Australia.

Byles J. **Women's health across the life-course and across the generations – Lessons from Australia.** *International Longevity Centre-UK lecture and debate*, 8 May 2018, London, UK.

Byles J. **An ecological model of housing in later life: From personal to policy.** *Singapore University of Technology and Design Lee Kuan Yew Centre for Innovative Cities*. 10 May 2018.

Byles J. **Social Determinants of Health: Significance for aged care policies and services for older people in Australia.** *Commonwealth Department of Health Executive Roundtable*, 6 June 2018, Canberra, ACT.

Byles J. **Prospects for healthy ageing and longevity for future generations of Australian women.** *2018 International Centenarian Consortium (ICC) Meeting*, 5-6 August 2018, Blue Mountains, NSW, Australia.

Byles J. **Successful ageing and longevity among Australian women.** *2<sup>nd</sup> International Living to 100 Conference*, 7-8 September 2018, Sydney, NSW, Australia.

Byles J & Dobson A. **Linking longitudinal and administrative data for women's health.** *Australian Academy of Health and Medical Sciences Annual Scientific Meeting*, 10-12<sup>th</sup> October, Melbourne, VIC, Australia.

Campbell A, Perales F & Baxter J. **Leveraging large-scale panel data to study sexual orientation: Two case studies.** *Society for Longitudinal and Life Course Studies conference*, 9-11 July 2018, Milan, Italy.

Chojenta C. **The impact of a history of poor mental health on health care costs in the perinatal period.** *2018 Taipei Medical University-University of Newcastle Joint Symposium of Recent Advances in Women's Health*, 13-14 April 2018, Taipei, Taiwan.

Chung H-F. **Female reproductive history and risk of type 2 diabetes.** *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2018*, 22-24 October 2018, Fremantle, WA.

Cordier R, Chen Y\_W, Chung D & Loxton D. **The influence of intimate partner violence on young women's ability to work.** *World Federation of Occupational Therapy Congress, 21-25 May 2018 Cape Town, South Africa.*

Lauche R, Anheyer D, Sibbritt D, Adams J & Cramer H. **How do yoga and meditation influence the relationship between negative life events and depression? A cross sectional analysis of 8009 women.** *Meeting of the European Health Psychology Society, 21-25 August 2018, Galway, Ireland.*

Lauche R, Anheyer D, Sibbritt D, Adams J & Cramer H. **Do yoga and meditation moderate the association between negative life events and depression? A cross sectional analysis of 8009 women.** *International Conference on Integrative Medicine and Health, 8-12 May 2018, Baltimore, USA.*

Lewis J & Mackenzie L. **Workforce participation patterns of women with breast cancer in Australia.** *2<sup>nd</sup> Victorian Comprehensive Cancer Centre (VCCC) Psycho-Oncology Conference, 8-9 February 2018. Melbourne, VIC, Australia.*

Lewis, J & Mackenzie L. **Workforce participation patterns of women with breast cancer in Australia.** *Centrelink Allied Health Conference for Assessors, June 2018, Sydney, NSW, Australia.*

Lewis, J & Mackenzie L. **Workforce participation patterns of women with breast cancer in Australia.** *World Federation of Occupational Therapy Congress, 21-25 May 2018, Cape Town, South Africa.*

Looman M, Schoenaker DAJM, Soedamah-Muthu SS, Mishra GD, Geelen A & Feskens EJM. **Pre-pregnancy dietary micronutrient adequacy and risk of developing gestational diabetes in an Australian population-based cohort.** *Dutch Epidemiology Congress 2018, 7-8 June 2018, Bilthoven, The Netherlands.*

Mishra G. (Keynote speaker). **Smoking and women's health across the life course.** *83<sup>rd</sup> Conference of the Japanese Society of Health and Human Ecology, 20-25 November, 2018. Gunma, Japan.*

Mishra G. (Keynote speaker). **Women with hysterectomy, premature or early menopause: Predictors and health consequences.** *Australasian Menopause Society Congress, 1 September 2018, Brisbane, QLD, Australia.*

Mishra G. (Keynote speaker). **Key findings of the Australian Longitudinal Study on Women's Health.** *National Fertility Conference: Towards the Complete Person, 19 - 21 October 2018, Brisbane, QLD, Australia.*

Patterson A. **Diet Quality and 10 years of healthcare costs by BMI categories: Data from the Australian Longitudinal Study on Women's Health.** *Dietitians Association of Australia 35<sup>th</sup> National Conference, 17-19 May 2018, Sydney, NSW, Australia.*

Rahman M, Eford JT & Byles J. **Trajectories to aged care service use among older Australian women: A repeated measure latent class analysis.** *47<sup>th</sup> Annual Conference of British Society for Gerontology*, Manchester, United Kingdom.

Rahman M, Eford JT & Byles JE. **Predicting transition of older women into and through the aged care system over time: A multi-state modelling approach using aged care linked data.** *37<sup>th</sup> International Conference of the International Society for Clinical Biostatistics*, 26 - 30 August 2018, Melbourne, VIC, Australia.

Rahman M, Forder P & Byles JE. **Capitalising on longitudinal data to evaluate aged care.** *Emerging Health Policy Research Conference*, Menzies Centre for Health Policy, 26 July 2018, Sydney, NSW, Australia.

Reilly N & Loxton D. **Prevention and early intervention programmes for maternal mental health.** *Emerging Health Policy Research Conference*, Menzies Centre for Health Policy, 26 July 2018, Sydney, NSW, Australia.

Thong E. **Contemporary risk of menstrual and reproductive dysfunction in women with Type 1 diabetes: a population-based study.** *2018 Annual Scientific Meetings – Endocrine Society of Australia and the Society for Reproductive Biology*, 19-22 August 2018, Adelaide, SA, Australia.

Van Uffelen JGZ, Heesch KC, van Gellecum Y, Burton NW, Pachana NA & Brown WJ. **Social interaction and physical activity in 6,401 older women: Concurrent and 9-year prospective associations.** *7<sup>th</sup> International Society for Physical Activity and Health Congress (ISPAH)*, 15-17 October 2018, London, UK.

Webb P, Bryant L & Spencer E. **Computerised analysis of written language in healthy ageing women.** *Speech Pathology Australia 2018 National Conference*, 27-30 May 2018, Adelaide, South Australia, Australia.

Xu X, Mishra G & Jones M. **Longitudinal progression of chronic conditions and multimorbidity before and after cancer diagnosis in mid-aged women: A nationwide cohort study in Australia.** *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2018*, 22-24 October 2018, Fremantle, WA, Australia.

Xu X, Mishra G, Dobson A & Jones M. **Accumulation of chronic conditions in overweight and obese women across the adult lifespan: A national cohort study of Australia.** *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2018*, 22-24 October 2018, Fremantle, WA, Australia.

Xu X, Mishra GD, Dobson AJ & Jones M. **Short-term weight change is associated with the accumulation of multimorbidity: A 20-year cohort study in Australia.** *2018 International Alliance of Research Universities (IARU) Ageing Longevity and Health Scientific and Graduate Student Conference*, 17-19 October 2018, Singapore.

Zhu D. **Smoking and menopause age: Pooled analysis of over 200,000 women.** *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2018*, 22-24 October 2018, Fremantle, WA, Australia.

Zhu D. **Body mass and menopause: Pooled analyses of 11 prospective studies.** *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2018, 22-24 October 2018, Fremantle, WA, Australia.*

### 9.3 Media

The study received solid media coverage throughout the year. Highlights included international coverage of preconception health research.

Date	Media	Media Source	Topic	Investigator	Details
10 Jan	Print	Australian Women's Weekly	Sexual Fluidity	Paco Perales	
1 May	Online	International Federation of Gynaecology and Obstetrics	Preconception Health	Gita Mishra	<a href="https://www.figo.org/news/healthy-living-prior-pregnancy-necessary-reduce-risk-birth-complications-0015936">https://www.figo.org/news/healthy-living-prior-pregnancy-necessary-reduce-risk-birth-complications-0015936</a>
17 Apr	Online	China.Org	Preconception Health	Gita Mishra	<a href="http://www.china.org.cn/world/Off_the_Wire/2018-04/17/content_50899286.htm">http://www.china.org.cn/world/Off_the_Wire/2018-04/17/content_50899286.htm</a>
17 Apr	Online	Health Canal	Preconception Health	Gita Mishra	<a href="https://www.healthcanal.com/pregnancy-childbirth/244441-healthy-habits-pregnancy-not-enough.html">https://www.healthcanal.com/pregnancy-childbirth/244441-healthy-habits-pregnancy-not-enough.html</a>
17 Apr	Online	Public Now	Preconception Health	Gita Mishra	<a href="http://www.publicnow.com/view/8E6AD253A5CE9B8E4084AEFE884D27E0FB508C18">http://www.publicnow.com/view/8E6AD253A5CE9B8E4084AEFE884D27E0FB508C18</a>
18 Apr	Online	The Conversation - Republished in: Nine MSN, Moder Australian, IOL South Africa,	Preconception Health	Gita Mishra	<a href="https://theconversation.com/better-health-and-diet-well-before-conception-results-in-healthier-pregnancies-94400">https://theconversation.com/better-health-and-diet-well-before-conception-results-in-healthier-pregnancies-94400</a>
19 Apr	Online	Daily Mail UK	Preconception Health	Gita Mishra	<a href="http://www.dailymail.co.uk/femail/article-5632449/Women-need-eat-healthily-lead-pregnancy-avoid-major-complications.html">http://www.dailymail.co.uk/femail/article-5632449/Women-need-eat-healthily-lead-pregnancy-avoid-major-complications.html</a>
19 Apr	Online	SBS Online	Preconception Health	Gita Mishra	<a href="https://www.sbs.com.au/food/article/2018/04/17/plan-get-healthy-years-you-start-trying-get-pregnant">https://www.sbs.com.au/food/article/2018/04/17/plan-get-healthy-years-you-start-trying-get-pregnant</a>

Date	Media	Media Source	Topic	Investigator	Details
19 Apr	TV	ABC News	Preconception Health	Gita Mishra	
19 Apr	TV	ABC (Queensland)	Preconception Health	Gita Mishra	
19 Apr	Online	ABC	Preconception Health	Gita Mishra	<a href="http://www.abc.net.au/news/2018-04-17/women-need-to-lose-weight-to-ensure-health-pregnancy-study-finds/9660628">http://www.abc.net.au/news/2018-04-17/women-need-to-lose-weight-to-ensure-health-pregnancy-study-finds/9660628</a>
19 Apr	Online	Celebrity Rave	Preconception Health	Gita Mishra	<a href="https://celebrityrave.com/article/women-need-to-eat-healthily-and-exercise-more-in-the-months-before-pre/">https://celebrityrave.com/article/women-need-to-eat-healthily-and-exercise-more-in-the-months-before-pre/</a>
7 May	Online	Knowridge	Preconception Health	Gita Mishra	<a href="https://knowridge.com/2018/05/healthy-habits-during-pregnancy-not-enough/">https://knowridge.com/2018/05/healthy-habits-during-pregnancy-not-enough/</a>
8 May	Online	Parent Hub	Preconception Health	Gita Mishra	<a href="https://www.parenthub.com.au/news/pregnancy-news/healthy-habits-pregnancy-not-enough/">https://www.parenthub.com.au/news/pregnancy-news/healthy-habits-pregnancy-not-enough/</a>
20 May	Online	Sydney Morning Herald	Baby Weight	Claire Davis	<a href="https://www.smh.com.au/national/act/having-babies-doesn-t-make-you-fat-according-to-new-research-20180517-p4z fz7.html">https://www.smh.com.au/national/act/having-babies-doesn-t-make-you-fat-according-to-new-research-20180517-p4z fz7.html</a>
20 May	Online	Canberra Times	Baby Weight	Claire Davis	<a href="https://www.canberratimes.com.au/national/act/having-babies-doesn-t-make-you-fat-according-to-new-research-20180517-p4z fz7.html">https://www.canberratimes.com.au/national/act/having-babies-doesn-t-make-you-fat-according-to-new-research-20180517-p4z fz7.html</a>
25 Jun	Online	Medical Express	Sitting	Paul Gardiner	<a href="https://medicalxpress.com/news/2018-06-women-ducks-frailty.html">https://medicalxpress.com/news/2018-06-women-ducks-frailty.html</a>
29 Jun	Print/Online	The Australian	Sitting	Paul Gardiner	<a href="http://online.isentialink.com/theaustralian.com.au/2018/06/28/7c20180f-15aa-487d-8573-8ddb69e5d2cc.html">http://online.isentialink.com/theaustralian.com.au/2018/06/28/7c20180f-15aa-487d-8573-8ddb69e5d2cc.html</a>

Date	Media	Media Source	Topic	Investigator	Details
29 Jun	Online	Senior AU	Sitting	Paul Gardiner	<a href="http://www.seniorau.com.au/8077-women-sitting-ducks-for-frailty">http://www.seniorau.com.au/8077-women-sitting-ducks-for-frailty</a>
18 Jul	Radio	ABC Newcastle (2NC)	Domestic Violence	Deb Loxton	
1 Oct	Online	Medical Journal of Australia's Doctor Portal newsletter	Falls	Leigh Tooth / Geeske Peeters	
15 Oct	Online	China.Org	Carers Report	Leigh Tooth / Julie Byles	<a href="http://www.china.org.cn/world/Off_the_Wire/2018-10/15/content_66286628.htm">http://www.china.org.cn/world/Off_the_Wire/2018-10/15/content_66286628.htm</a>
15 Oct	Radio	4BC	Carers Report	Leigh Tooth	
15 Oct	Radio	ABC North Qld	Carers Report	Leigh Tooth	
16 Oct	Online	Mirage News	Carers Report	Leigh Tooth / Julie Byles	<a href="https://www.miragenews.com/grandmothers-deserve-more-recognition-for-caring/">https://www.miragenews.com/grandmothers-deserve-more-recognition-for-caring/</a>
16 Oct	Radio/Online	ABC Newcastle (2NC)	Carers Report	Julie Byles	<a href="https://www.abc.net.au/radio/newcastle/programs/drive/grandmas-edit/10383766">https://www.abc.net.au/radio/newcastle/programs/drive/grandmas-edit/10383766</a>
16 Oct	Online	Aged Care Insight	Carers Report	Leigh Tooth / Julie Byles	<a href="https://www.agedcareinsite.com.au/2018/10/grandmothers-taking-on-childcare-happy-and-healthy-to-a-point/">https://www.agedcareinsite.com.au/2018/10/grandmothers-taking-on-childcare-happy-and-healthy-to-a-point/</a>
16 Oct	Online	Senior AU	Carers Report	Julie Byles	<a href="http://www.seniorau.com.au/8241-caring-for-grandchildren-a-grandmother-s-joy-or-a-burden">http://www.seniorau.com.au/8241-caring-for-grandchildren-a-grandmother-s-joy-or-a-burden</a>
18 Oct	Online	F-magazine	Carers Report	Leigh Tooth / Julie Byles	<a href="http://f-magazine.online/super-grandmothers/">http://f-magazine.online/super-grandmothers/</a>
26 Oct	Online	Parent Hub	Carers Report	Leigh Tooth / Julie Byles	<a href="https://www.parenthub.com.au/news/parenting-news/caring-for-grandchildren-a-joy-or-a-burden/">https://www.parenthub.com.au/news/parenting-news/caring-for-grandchildren-a-joy-or-a-burden/</a>

Date	Media	Media Source	Topic	Investigator	Details
27 Oct	Print	Courier Mail	Smoking mothers	Gita Mishra	
29 Oct	Online	The Sector	Carers Report	Leigh Tooth	<a href="https://thesector.com.au/2018/10/23/economic-environment-unfavourable-for-mothers-returning-to-work-kpmg-study/">https://thesector.com.au/2018/10/23/economic-environment-unfavourable-for-mothers-returning-to-work-kpmg-study/</a>
30 Oct	Print	News Mail (Bundaberg)	Smoking mothers	Gita Mishra	
30 Oct	Print	Daily Examiner (Grafton)	Smoking mothers	Gita Mishra	
31 Oct	Print	Sunshine Coast Daily	Smoking mothers	Gita Mishra	
3-Nov	Online	News Corp - Courier Mail, Herald Sun (Melbourne), Daily Telegraph (Sydney), The Mercury (Hobart), Adelaide Now, Toowoomba, Gympie, Mackay, Warwick, Bundaberg, Townsville, Gladstone, Fraser Coast, Ipswich, Lismore, Northern Territory News, Gold Coast, Geelong, Cairns, Grafton, Rockhampton	Smoking mothers	Gita Mishra	<a href="http://online.isentialink.com/dailymercury.com.au/2018/11/03/b485aa14-54e6-434e-9b23-c983106849bb.html">Example article http://online.isentialink.com/dailymercury.com.au/2018/11/03/b485aa14-54e6-434e-9b23-c983106849bb.html</a>
3 Nov	Print	Townsville Bulletin	Smoking mothers	Gita Mishra	
4 Nov	Online	Knowridge	Sitting	Paul Gardiner	<a href="https://knowridge.com/2018/11/sitting-too-long-linked-to-heart-disease-diabetes-cancer-and-more/">https://knowridge.com/2018/11/sitting-too-long-linked-to-heart-disease-diabetes-cancer-and-more/</a>

## 9.4 Social media

During the year, details of Study outcomes and activities have been posted on the Study's social media accounts on Facebook and Twitter.

As in previous years, content posted to Facebook is aimed at a lay audience - particularly participants. In previous years, the Study maintained two Facebook pages – one for the original cohorts, and one set up in 2012/3 specifically for recruitment of the new 1989-95 cohort. In 2018, these two pages were merged, and the [new page](#) now has almost 10,000 followers. Roughly 95% of the audience is female and is most likely to be participants from the 1989-95 cohort, with some from the 1973-78 cohort, and a few from the 1946-51 cohort. We share lay summaries, news releases, media and important updates from the study, with each post reaching between 400 and 1,200 people.

The Study's Twitter account promotes engagement with collaborators, other researchers, media professionals, policy makers, and non government organisations (NGOs) as well as the general public. Tweets highlight study news, data releases, journal papers, lay summaries and attendance at conferences. The account currently has 1,640 followers.

## 9.5 Website

The ALSWH website ([www.alswh.org.au](http://www.alswh.org.au)) continues to be an important portal for communication of ALSWH activities to the wider community. Throughout the year, it has been regularly updated with details of published reports, ongoing and completed analyses, and abstracts of all accepted and published papers as well as details of current collaborators and students. A number of updates have been made to improve the functionality and accessibility of the ALSWH data. These included:

- The [data dictionary](#) was updated
- Data books for [1946-51 cohort Survey 8](#) and [1989-95 cohort Survey 4](#) were added
- Details of [survey variables](#) were updated on the sample page
- Additional details about linked data (variables etc.) and details relevant to accessing linked data were added to the [data linkage page](#).

## 10. Collaborative Research Activities

### 10.1 Scientific meetings and teleconferences among the research team

#### 10.1.1 Management Committees

The Study Management Committee (SMC) oversees all aspects of ALSWH, ensuring that all contractual obligations are fulfilled and leading strategic planning for the Study (beyond contractual obligations). Membership of the SMC comprises the ALSWH Directors and Co-directors. During 2018, SMC meetings have been held by teleconference every month, except February, when a face-to-face meeting was held in Brisbane.

The Strategic Advisory and Stakeholder Committee (SASC) advises and supports the SMC on strategic and scientific issues and promotes ALSWH and the use of its research and data. Membership of the committee comprises the four members of the ALSWH SMC, four ALSWH collaborators and up to six stakeholders including people with expertise in research translation, policy implementation or members are:

#### Chair:

##### **Professor Sally Redman**

Chief Executive Officer

Sax Institute, Sydney, New South Wales

#### ALSWH Directors and Deputy Directors:

##### **Professor Gita Mishra**

Director, ALSWH (The University of Queensland)

Professor of Life Course Epidemiology & NHMRC Principal Research Fellow

School of Public Health, Faculty of Medicine, The University of Queensland

##### **Professor Julie Byles**

Director, ALSWH (The University of Newcastle)

Director, Priority Research Centre for Generational Health and Ageing

Global Innovation Chair in Responsive Transitions in Health and Ageing

School of Medicine and Public Health, The University of Newcastle

##### **A/ Professor Leigh Tooth**

Principal Research Fellow and Deputy Director, ALSWH (The University of Queensland)

School of Public Health, Faculty of Medicine, The University of Queensland

**Professor Deb Loxton**

Deputy Director ALSWH (The University of Newcastle)

Director, Priority Research Centre for Generational Health and Ageing

School of Medicine and Public Health, The University of Newcastle

ALSWH collaborators:

**Professor Wendy Brown**

Director, Centre for Research on Exercise, Physical Activity and Health

School of Human Movement and Nutrition Sciences

Faculty of Health and Behavioural Sciences, The University of Queensland

**Professor Jayne Lucke**

Director, Australian Research Centre in Sex, Health and Society

College of Science, Health and Engineering, School of Psychology and Public Health

La Trobe University

Stakeholders:

**Professor Louisa Jorm**

Director, Centre for Big Data Research in Health

University of New South Wales, Sydney

**Janet Michelmore**

Executive Director, Jean Hailes

**Professor Marie-Paul Austin**

Director, St John of God Burwood Hospital

Chair, Perinatal and Women's Mental Health Research Unit

University of New South Wales Sydney

**Professor Catherine D'Este**

Chair in Biostatistics, National Centre for Epidemiology and Population Health

Australian National University

**Professor Leon Flicker**

Professor of Geriatrics & Director, Western Australia Centre for Health and Ageing  
University of Western Australia

**Professor John Attia**

Academic Director, School of Medicine and Public Health  
The University of Newcastle

Representative from the Department of Health:

**Sonya Glasson**

Assistant Director, Preventive Policy Section, Preventive Health Policy Branch  
Population Health & Sport Division, Department of Health

To date during 2018 the SASC has met for one face-to-face meeting, in Sydney, on 16 July.

### 10.1.2 Data Management Group

The Data Management Group (DMG) is responsible for all technical issues involving ALSWH data. The group's primary tasks include:

- Providing a forum for discussion of all aspects of data management within ALSWH
- Disseminating summaries of current data management activities to the research team and collaborators
- Assessing the validity, reliability and responsiveness of new survey items
- Maintaining scale evaluation procedures
- Evaluating and documenting the validity and reliability of new scales included on surveys
- Developing and documenting definitions for derived variables in survey and other data sets
- Documenting datasets through the preparation of variable labels and formats, and the maintenance of the Data Dictionary and its Supplement
- Maintaining archival procedures for all datasets

To date in 2018, the DMG has reviewed all items for Survey 8 of the 1973-78 cohort and has commenced review of items for Pilot Survey 9 of the 1946-51 cohort. The DMG meets monthly by teleconference, and is chaired by David Fitzgerald (Data Manager – The University of Queensland) and Anna Graves (Operations Manager - The University of Newcastle). Members in 2018 have included:

- |                                   |                            |
|-----------------------------------|----------------------------|
| • Anna Graves                     | • Professor Annette Dobson |
| • David Fitzgerald                | • Ryan Tuckerman           |
| • Professor Gita Mishra           | • Peta Forder              |
| • Professor Julie Byles           | • Michael Waller           |
| • Professor Deborah Loxton        | • Dr Hsiu-Wen Chan         |
| • Associate Professor Leigh Tooth | • Colleen Loos             |
| • Richard Hockey                  | • Dominic Cavenagh         |
| • Dominic Cavenagh                | • Colleen Loos             |

### 10.1.3 Data Access Committee

The Data Access Committee assesses and monitors all applications to use ALSWH data and linked data. The committee's primary tasks are to:

- Assess each application for use of ALSWH data (and where required, linked data from external datasets) on merit for whether:
  - It is a reasonable and appropriate use of ALSWH data
  - It is a feasible project which will lead to scientifically valid findings
  - The research team have the necessary skills and resources to conduct the research.
  - The research team members who require access to the linked data have the necessary ethical permissions.
- Assess each application to conduct an ALSWH substudy on merit for whether:
  - The relevant ALSWH cohort/s is/are an appropriate target population for the research
  - The substudy will be an acceptable burden on ALSWH participants
  - It is a feasible project which will lead to scientifically valid findings
  - The research team have the necessary skills, resources and funding to conduct the research.
- Review outcomes (publications, conference abstracts, reports) from research using ALSWH data on request from ALSWH liaison persons.

The Data Access Committee is chaired by Associate Professor Leigh Tooth, and members in 2018 included:

- Associate Professor Leigh Tooth
- Professor Gita Mishra
- Professor Julie Byles
- Professor Wendy Brown
- Professor Annette Dobson
- Professor Jayne Lucke
- Professor Deborah Loxton
- Peta Forder

Data linkage projects are also reviewed by the ALSWH Data Manager, David Fitzgerald and the ALSWH Data Linkage Coordinator, Colleen Loos.

## 10.2 Research projects

ALSWH data has been provided to collaborators for use in almost 750 research projects. Over 55 new applications to use data have been received in 2018, and 51 projects have been approved (4 are currently under review). Researchers who receive ALSWH data are required to provide regular reports on progress of their projects - reports for 2018 are included in Appendix A. Topics under investigation include:

- Chronic conditions such as musculoskeletal problems, cardiovascular conditions, cancer and diabetes
- Health service use and systems
- Mental health
- Ageing
- Reproductive health
- Methodological issues
- Tobacco, alcohol and other drugs
- Medications
- Weight, nutrition and physical activity
- Health in rural and remote areas
- Social factors in health and well-being
- Abuse

## 10.3 Substudies

ALSWH participants are occasionally invited to take part in 'substudies', which are additional surveys outside the main ALSWH survey, targeting particular areas of health. In 2018, a number of substudies have been conducted, with topics such as how older women in the 1921-26 cohort demonstrate successful and healthy ageing (EoI [W102](#)), work/life balance in the 1973-78 cohort ([W096](#)), diabetes management, particularly good glucose control, in the 1946-51 and 1973-78 cohorts ([W097](#)) and reliability of Intimate Partner Violence measures ([W100](#)).

Other recent substudies have covered a range of topics, including premenopausal health, mother and children's health, use of complementary and alternative medicine, use of alcohol during pregnancy, perinatal mental health, the impact of drug regulatory actions, back pain, and arthritis. Reports on the research being conducted using data from these substudies are included in Appendix B.

## **10.4 Student projects**

Thirty-four postgraduate students are currently working on aspects of the project, investigating a wide range of topics, including mental health, arthritis, cancer, nutrition, pregnancy, menopause, and ageing. Detailed reports on student projects are available in Appendix C.

## 11. Project staff

The University of Queensland	
Director ALSWH	Professor Gita Mishra
Deputy Director ALSWH	A/Professor Leigh Tooth
Research Fellow (s)	Professor Annette Dobson Dr Hsin-Fang Chung
Biostatistician	Dr Michael Waller
Statistician	Richard Hockey
Data Manager	David Fitzgerald
Data Linkage Coordinator	Colleen Loos
Research Project Manager	Megan Ferguson
Communications and Engagement Officer	Helen Gray
Senior Research Assistant	Dr Hsiu-Wen Chan
Database Developer	Charani Kiriwandeniya Chamila Pathigoda
Administration Officer(s)	Leonie Gemmell Christine Coleman

At the University of Queensland, Professor Annette Dobson, Associate Professor Leigh Tooth, Helen Gray, Charani Kiriwandeniya and Chamila Pathigoda have worked part-time on the project. Charani Kiriwandeniya ceased to work for the project during 2018.

<b>Research Centre for Generational Health and Ageing The University of Newcastle</b>	
Director ALSWH	Professor Julie Byles
Deputy Director ALSWH	Professor Deborah Loxton
Research Fellows	Dr Melissa Harris Dr Xenia Dolja-Gore
Statistician	Peta Forder
Operations Manager	Anna Graves
Database Developer	Ryan Tuckerman
Data Assistant	Dominic Cavenagh
Research Assistance Manager	Natalie Townsend
Administration Officers	Melanie Moonen Clare Thomson Katherine Bailey
Project Assistants	Margaret Jobber Ellen Monaghan Jenny Helman Sarah Kabanoff Jemma O'Carroll Kristee Lee Jobson Anna Dawes Joanne Hiles Madeline Cordingley Paula Bridge Sally Rooney

## APPENDIX A: Research projects

### 11.1 Current projects

#### 11.1.1 Chronic conditions

##### ARTHRITIS

Project: A133B	Arthritis impact over time: A longitudinal exploration of burden of illness, comorbidities (particularly depression), management, and health care costs in older Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Richard Gibson - Research Centre for Generational Health and Ageing, University of Newcastle</li> <li>• Prof Glenn Salkeld - School of Public Health, The University of Sydney</li> <li>• Dr Michelle Cunich - School of Public Health, The University of Sydney</li> <li>• Prof Isabel Higgins - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Fiona Blyth - Pain Management &amp; Research Centre, The University of Sydney</li> <li>• Alison Gibberd - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Thomas Lo - University of Alberta</li> <li>• Dr Katie de Luca - The University of Newcastle</li> <li>• Prof Gillian Hawker - University of Toronto and Institute for Clinical Evaluative Sciences, Canada</li> <li>• A/Prof Henry Pollard - Faculty of Health Science, Australian Catholic University, Strathfield</li> <li>• Prof Lyn March - Medicine, Northern Clinical School, The University of Sydney</li> <li>• Dr Chris Hayes - Hunter Integrated Pain Service, Hunter New England Health</li> </ul>

	<ul style="list-style-type: none"> <li>• Amanda McGovern - University of Wisconsin-Madison</li> <li>• Dr Lynn Francis - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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Arthritis is the most common cause of activity limitation and disability among older Australian women. In 2002, arthritis and musculoskeletal conditions were established as a National Health Priority Area, in recognition of the major health and economic burden these conditions place on our community. The broad aim of this project is to investigate the effect of Arthritis, and comorbidities associated with arthritis, on health and quality of life for older Australian women. The combination of extensive demographic, psychosocial and health survey data linked with Medicare and hospitalisations data means that the burden and economic costs of Arthritis in Australia can be examined more rigorously than in any previous work.

### Research outcomes:

#### *Publications:*

- Older women and arthritis: Tracking impact over time. Parkinson L, Gibson R, Robinson I & Byles J., *Australasian Journal on Ageing*, 2010, 29 (4); 155-160.
- Contemporaneous severity of symptoms and functioning reflected by variations in reporting doctor-diagnosed osteoarthritis. Peeters G, Parkinson L, Badley E, Jones M, Brown W, Dobson A & Mishra G. *Arthritis Care & Research*, 2013, 65 (6); 945-953.

#### *Conferences, seminars and workshops:*

- Arthritis and older Australian women: Findings from the Australian Longitudinal Study on Women's Health. Parkinson L. *ICES/CEU Conjoint Evaluative Sciences Rounds*. Toronto, Canada, 25 January 2011.
- Out-of-hospital medical services use by older Australian women with arthritis. Parkinson L, Cunich M, Dolja-Gore X & Byles J. *Ninth Asia/Oceania Regional Congress Gerontology and Geriatrics*, Melbourne, Victoria, 23-27 October 2011.
- Out-of-hospital medical services use by older Australian women with arthritis. Parkinson L, Byles J, Dolja-Gore X & Cunich M. *Health Services Research Association Australia and New Zealand Biennial Conference*, Adelaide, SA., 5 - 7 December 2011.
- Longitudinal variations in reporting doctor-diagnosed arthritis reflect contemporaneous severity of symptoms disability. Peeters G, Parkinson L, Badley E, Brown W, Dobson A & Mishra G. *The European League Against Rheumatism*, Berlin, Germany, 6 - 9 June 2012.
- Arthritis in older women - Impacts on participation. Parkinson L. *New Zealand Association of Gerontology: Ageing and Diversity Conference 2012*, Auckland, New Zealand, 13 - 15 September 2012

- Arthritis and comorbidities: Interplay and impact on management (symposium contribution). Parkinson L. *The 20<sup>th</sup> IAGG World Congress of Gerontology and Geriatrics*, Seoul, Korea, 23 - 27 June 2013.
- Arthritis and older Australian women: Findings from Australian Longitudinal Study on Women's Health. Parkinson L. *LIVWELL Research Group Seminar Series*, Simon Fraser University, Vancouver, Canada, 25 April 2014.
- Arthritis and older Australian women: Findings from the Australian Longitudinal Study on Women's Health. Parkinson L. *Association of Independent Retirees*, Newcastle, NSW, 3 June 2011.

Project: A133C	The profile of arthritis pain in older women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, University of Newcastle</li> <li>• Dr Sharyn Hunter - Research Centre for Generational Health and Ageing, University of Newcastle</li> <li>• Prof Isabel Higgins - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Fiona Blyth - Pain Management &amp; Research Centre, The University of Sydney</li> <li>• Dr Thomas Lo - University of Alberta</li> <li>• Dr Katie de Luca - The University of Newcastle</li> <li>• Prof Gillian Hawker - University of Toronto and Institute for Clinical Evaluative Sciences, Canada</li> <li>• A/Prof Henry Pollard - Faculty of Health Science, Australian Catholic University, Strathfield</li> <li>• Prof Lyn March - Medicine, Northern Clinical School, The University of Sydney</li> <li>• Dr Chris Hayes - Hunter Integrated Pain Service, Hunter New England Health</li> <li>• Aron Downie – George Institute of Musculoskeletal Health</li> <li>• Scott Haldeman – University of California</li> </ul>

	<ul style="list-style-type: none"> <li>• Matthew Fernandez – The University of Sydney</li> <li>• Chibueze 'George' Amaefula – School of Nursing and Midwifery, The University of Newcastle</li> <li>• Olubanke Ramon - School of Nursing and Midwifery, The University of Newcastle</li> <li>• Prof Jan Hartvigsen – Department of Sports Medicine and Clinical Biomechanics, University of Southern Denmark</li> <li>• A/Prof Arnold Wong – Department of Rehabilitation Sciences, The Hong Kong Polytechnic University</li> <li>• Dr Andreas Eklund – Department of Institute of Environmental Medicine, Karolinska Institut</li> </ul>
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### Research outcomes:

#### *Publications:*

- How is the experience of pain measured in older, community dwelling people with osteoarthritis? A systematic review of the literature. de Luca K, Parkinson L, Pollard H, Byles J & Blyth F, *Rheumatology International*, 2015, 35(9); 1461-1472.
- The prevalence and cross-sectional associations of neuropathic-like pain among older, community-dwelling women with arthritis. de Luca K, Parkinson L, Byles J, Lo TKT, Pollard H & Blyth F. *Pain Medicine*, 2016, 17(7); 1308-1316.
- Three subgroups of pain profiles identified in 277 women with arthritis: a latent class analysis. de Luca K, Parkinson L, Downie A, Blyth F, Byles J. *Clinical Rheumatology*, 2017, 36 (3); 625-634.
- The relationship between spinal pain and comorbidity: A cross-sectional analysis of 579 community-dwelling, older, Australia women. de Luca K, Parkinson L, Haldeman S, Byles J, Blyth F. *Journal of Manipulative and Physiological Therapeutics*, 2017, 40 (7); 459-466.

#### *Conferences, seminars and workshops*

- How is the experience of pain measured in older, community dwelling people with osteoarthritis – A systematic review of the literature (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *Chiropractic and Osteopathic College of Australasia National Conference - The Ageing Spine*, Sydney, NSW, 13 - 14 October 2012.
- How is the experience of pain measured in older, community dwelling people with osteoarthritis – A systematic review of the literature (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *11<sup>th</sup> National Conference of Emerging Researchers in Ageing - Making an Impact*, Brisbane, Qld, 19 - 20 November 2012.

- Discovering three distinct profiles of pain in 227 older women with arthritis (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *World Federation of Chiropractic 12<sup>th</sup> Biennial Conference*, Athens, Greece, 13-16 May 2015.
- The prevalence and impact of neuropathic pain in older women with arthritis (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *World Federation of Chiropractic 12<sup>th</sup> Biennial Conference*, Athens, Greece, 13-16 May 2015.
- Three subgroups of pain phenotypes in 227 older, community-dwelling women with arthritis: A cross-sectional study. de Luca K, Parkinson L, Downie A & Byles J. *Chiropractic Association of Australia National Conference*, Melbourne, Vic, 13-15 October 2015.
- Is spinal pain associated with comorbidity? A cross-sectional analysis of the relationship between spinal pain and lifestyle diseases. de Luca K, Parkinson L & Haldeman S & Byles J. *Chiropractic Association of Australia National Conference*, Melbourne, Vic, 13-15 October 2015.
- Mild, moderate or severe pain? How 227 older women living with arthritis have different profiles of the multi-dimensional experience of pain and the impact of profile membership on their health. de Luca K, Parkinson L, Downie A & Byles J. *CAA NSW Research Symposium*, Sydney, NSW, 12 September 2015.
- Three subgroups of pain phenotypes in 227 older, community-dwelling women with arthritis: A cross-sectional study. de Luca K, Parkinson L, Downie A, Blyth F, Byles J. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- Is spinal pain associated with comorbidity? A cross-sectional analysis of the relationship between spinal pain and lifestyle diseases. de Luca K, Parkinson L, Haldeman S, Byles J. *CAA NSW Scientific Symposium*, Sydney, NSW, 10 September 2016.

Project: A133D	Incident osteoarthritis in a cohort of 'baby boomer' women: Management and outcomes in the Australian community
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, University of Newcastle</li> <li>• Prof Parker Magin - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Michelle Cunich - School of Public Health, The University of Sydney</li> </ul>

	<ul style="list-style-type: none"> <li>• A/Prof Fiona Blyth - Pain Management &amp; Research Centre, The University of Sydney</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Prof Dimity Pond - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Gillian Caughey - University of South Australia</li> <li>• A/Prof Satvinder Dhaliwal - Curtin University</li> <li>• A/Prof Rachael Moorin - Curtin Health Innovation Research Institute, Curtin University</li> <li>• Dr Norman Ng - School of Human Movement Studies, The University of Queensland</li> </ul>
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Osteoarthritis (OA) is a leading contributor to disability in Australia. As OA is the most common chronic disease reported by older women, there is a critical need to understand the factors that enable women with OA to remain active and independent in the community as they age. The NHMRC endorsed RACGP guidelines for non-surgical management of OA in the Australian health care context emphasise the importance of self management to prevent acute OA episodes, and delay functional limitations and disability. However, we do not know how OA is being managed in the community. This project will examine the extent to which RACGP guidelines are being applied among "baby boomer" women with OA by examining onset of OA, immediate and ongoing management, and related health outcomes.

**Research outcomes:**

*Publications:*

- Incident osteoarthritis associated with increased allied health services use in 'baby boomer' Australian women. Parkinson L, Moorin R, Peeters G, Byles J, Blyth F, Caughey G, Cunich M, Magin P, March L & Pond D. *Australian and New Zealand Journal of Public Health*, 2016, 40 (4); 356-361.

*Conferences, seminars and workshops:*

- Health services utilization in older women: The impact of incident osteoarthritis. Parkinson L, Moorin R, Peeters G, Caughey G, Byles J, Cunich M, Magin P, Pond D & Blyth F. *International Data Linkage Conference*, Vancouver, Canada, 28 - 30 April 2014.
- Lifestyle changes of women with osteoarthritis in Australia. Ng N, Moorin R, Parkinson L, Brown W & Peeters G. *6<sup>th</sup> International Conference on Physical Activity and Public Health (ICPAPH)*, Bangkok, Thailand, 16-19 November 2016.
- Examples of research into translation of evidence for ageing and health. Parkinson L. *AAG NHMRC Workshop on Research Translation*, Brisbane, Qld, 20th November 2012.

## CANCER

Project: A468	Population-level relevance of risk factors for cancer
Collaborative Investigators:	<ul style="list-style-type: none"><li>• Prof Graham Giles - Cancer Epidemiology Centre, Cancer Council Victoria</li><li>• A/Prof Claire Vajdic - Centre for Big Data Research in Health, University of New South Wales</li><li>• A/Prof Dianna Magliano - Baker IDI Heart and Diabetes Institute</li><li>• A/Prof Jonathan Shaw - Baker IDI Heart and Diabetes Institute</li><li>• Prof Paul Mitchell - Discipline of Clinical Ophthalmology and Eye Health, University of Sydney</li><li>• Dr Maarit Laaksonen - Centre for Big Data Research in Health, University of New South Wales</li><li>• Prof Karen Canfell - Cancer Research Division, Cancer Council NSW</li><li>• Dr Robert MacInnis - Cancer Council Victoria</li><li>• Prof Emily Banks - Australian National University</li><li>• Prof Robert Cumming - University of Sydney</li><li>• Dr Barbara-Ann Adelstein -</li><li>• Maria Arriaga - Centre for Big Data Research in Health, University of New South Wales</li><li>• Prof Anne Taylor - North West Adelaide Health Study (NWAHS), University of Adelaide</li><li>• Dr Vasant Hirani - Concordia Health and Ageing in Men Project (CHAMP), The University of Sydney</li><li>• A/Prof Kay Price - Division of Health Sciences, University of South Australia</li><li>• Peter Hull - Centre for Big Data Research in Health, University of New South Wales</li></ul>

Cancer prevention guidelines should be informed by population-level relevance of the risk factors. Measures such as the Population Attributable Fraction (PAF), which integrate both the strength of association and the prevalence of the risk factors in the population, can estimate that relevance. In this

study, the population-level relevance of lifestyle-related risk factors for cancer in Australia will be studied for the first time by applying our recently published PAF measure and program to data from established large-scale Australian cohort studies, including ALSWH, linked to national cancer and death registries (relative risk estimates) and nationally representative health survey (exposure prevalence estimates). A pooled cohort study based on the individual cohorts will also be conducted, by applying our recently demonstrated meta-analysis techniques for PAF, to further enhance the precision of the estimates and to allow the analysis of less common cancers. Knowledge on national cancer burden is essential for targeting cancer interventions.

**Research outcomes:**

- Population-level relevance of risk factors for cancer in the presence of competing risk of death. Laaksonen M. *Australian Statistical Conference 2014*, Sydney, NSW, 7 - 10 July 2014.
- Population-level relevance of risk factors for cancer: pooled study of seven Australian cohorts. Laaksonen M. *World Cancer Congress*, Melbourne, Victoria, 3 - 6 December 2014.
- Burden of lung cancer attributable to lifestyle risk factors: pooled study of seven Australian cohorts. Laaksonen M et al. *Sydney Cancer Conference 2016*, Sydney, NSW, 22-23 September 2016
- Population-level relevance of lifestyle-related risk factors for pancreatic cancer. Arriaga M et al. *Sydney Cancer Conference 2016*, Sydney, NSW, 22-23 September 2016.
- Burden of lung cancer attributable to modifiable lifestyle-related risk factors. Laaksonen MA, et al. *Annual 45 and Up Study Collaborators' Meeting*, Sydney, NSW, 6 September 2016.
- Burden of colorectal cancer in Australia attributable to lifestyle-related risk factors. Laaksonen MA, et al. *Clinical Oncology Society of Australia (COSA) 43<sup>rd</sup> Annual Scientific Meeting*, Gold Coast, Qld, 15 - 17 November 2016.
- Burden of lung cancer in Australia avoidable by modifications to lifestyle-related risk factors. Laaksonen M, Arriaga M, Hull P, Canfell K, MacInnis R, Banks E, Giles G, Mitchell P, Cumming R et al. *American Association for Cancer Research (AACR) Annual Meeting*, Washington, DC, USA, 1-5 April 2017.
- Burden of colorectal cancer attributable to lifestyle-related risk factors: A pooled study of seven Australian cohorts. Vajdic CM, Arriaga M, Hull P, Canfell K, MacInnis R, Banks E, Giles G, Mitchell P, Cumming R et al. *American Association for Cancer Research (AACR) Annual Meeting*, Washington, DC, USA, 1-5 April 2017.
- Population-level relevance of lifestyle-related risk factors for pancreatic cancer in Australia. Arriaga M, Vajdic CM, Hull P, Canfell K, MacInnis R, Banks E, Giles G, Mitchell P, Cumming R et al. *American Association for Cancer Research (AACR) Annual Meeting*, Washington, DC, USA, 1-5 April 2017.

- Premenopausal and postmenopausal breast cancer burden attributable to health behaviours and hormonal factors. Arriaga M, Vajdic CM, Hull P, Canfell K, MacInnis R, Banks E, Giles G, Mitchell P, Cumming R, et al. *Annual Scientific Meeting of the Clinical Oncology Society of Australia (COSA)*, Sydney, NSW, 13-15 November 2017.

Project: A554	Does treatment for breast cancer increase incidence of falls?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Michelle Smith – School of Health and Rehabilitation Sciences, The University of Queensland</li> <li>• Dr Janni Leung – Queensland Centre for Mental Health Research, The Park, Wacol, &amp; The National Drug and Alcohol Research Centre (NDARC), UNSW</li> <li>• Prof Michel Coppieters – Griffith University</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Breast cancer is the most common cancer among women. Breast cancer survival rates are high, but many women are living with unwanted consequences of breast cancer treatment. It has been suggested that women with a history of breast cancer have an increased incidence of falls compared to women without a history of breast cancer from a similar age group. However, research in this area is limited. The aim of this research project is to determine if falls and injurious falls are more common in women with a history of breast cancer than controls, and to determine what factors increase the risk of falling in this population.

Project: A555	Utilisation of health services and pharmacology in relation to pain after breast cancer treatment
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Michelle Smith – School of Health and Rehabilitation Sciences, The University of Queensland</li> <li>• Dr Janni Leung – Queensland Centre for Mental Health Research, The Park, Wacol, &amp; The National Drug and Alcohol Research Centre (NDARC), UNSW</li> <li>• Prof Michel Coppieters – Griffith University</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Up to 69% of women experience pain after breast cancer treatment and this pain is associated with poor quality of life. The aim of this research project is to understand how utilisation of healthcare services differs among women with pain compared to those without pain, and in women with pain who do and do not have a history of breast cancer.

Project: A556	The prevalence and impact of pain in women after breast cancer: A longitudinal cohort study
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Michelle Smith – School of Health and Rehabilitation Sciences, The University of Queensland</li> <li>• Dr Janni Leung – Queensland Centre for Mental Health Research, The Park, Wacol &amp; The National Drug and Alcohol Research Centre (NDARC), UNSW</li> <li>• Prof Michel Coppieters – Griffith University</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

The aim of this research project is to understand how pain and the impact of pain changes over time, what factors influence the development of pain after breast cancer.

### **DIABETES**

Project: A680	Early life and childhood risk factors for gestational diabetes
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Danielle Schoenaker - Cancer Council Victoria</li> <li>• Prof Leonie Callaway - School of Medicine, The University of Queensland</li> </ul>

During pregnancy 5-10% of women in the ALSWH develop diabetes, and this may have an impact on the health of mothers as well as their babies. Our previous project has shown that risk of diabetes during pregnancy is higher among women who experienced an early age at first menstruation (before age 12). This project builds on from this work by examining the links between a range of other early life and childhood factors – including birth- and childhood weight, parents' education and adverse childhood experiences – with gestational diabetes, and how these links may be influenced by lifestyle and experiences during adulthood.

#### **Research outcomes:**

- Presentation at *Australasian Diabetes in Pregnancy Society (ADIPS) Annual Scientific Meeting* in August 2018.

Project: A711	Reproductive and bone health in Australian females with Type 1 diabetes mellitus
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Helena Teede - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Eleanor Pei Hua Thong - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Type 1 diabetes mellitus (T1DM) is thought to be associated with menstrual and fertility disturbances, in addition to an increased risk of fracture. However, the link between menstrual disorders and bone health has not been well studied. This project aims to study reproductive challenges and its links to bone health in Australian females with T1DM.

**Research outcomes:**

- Presentation 'Contemporary risk of menstrual and reproductive dysfunction in women with Type 1 diabetes: a population-based study' at the *Endocrine Society of Australia (ESA) Annual Scientific Meeting*, August 2018.

**ASTHMA**

Project: A346	Factors affecting survival among older women with asthma
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Parivash Eftekhari - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Management of and mortality from asthma has improved substantially in all age groups except for older people. There is very little recognition of the importance of asthma management at older ages, and the impact of psychosocial and comorbid conditions on asthma management. We will be looking at outcomes for women with respiratory conditions (various defined as asthma and/or bronchitis), compared with women without these conditions in terms of 'survival' and 'quality of life'. We will also

analyse how these outcomes are modified by various covariates (socio-demographic factors, health risk factors and comorbidities) among women with respiratory conditions and symptoms.

**Research outcomes:**

*Publications:*

- Impact of asthma on mortality in older women: an Australian cohort study of 10,413 women. Eftekhari P, Forder PM, Majeed T & Byles JE. *Respiratory Medicine*, 2016, 119; 102-108.

*Conferences, seminars and workshops*

- Impact of asthma on mortality in older women: An Australian cohort study of 10,413 women. Eftekhari P. *American Thoracic Society Conference*, San Diego, USA, 16 - 21 May 2014.

**DEMENTIA**

Project: A546B	Capture-recapture using multiple data sources: Estimating the prevalence of dementia in a cohort of older women.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

As Australia’s population ages, the number of people with dementia will also increase. As such the costs and resources required to treat these people is likely to increase considerably. It is important to understand when, and in what setting dementia is diagnosed to inform policy decisions regarding this condition. This analysis aims to estimate the prevalence of dementia in a cohort of older women. The analysis will use multiple data sources, and assess how the prevalence of the condition changes with increasing age.

**Research outcomes:**

*Publications*

- [Estimating the prevalence of dementia using multiple linked administrative health records and capture–recapture methodology.](#) Waller M, Mishra G & Dobson A. *Emerging Themes in Epidemiology*, 2017, 14(1); 1-9 (open access).

*Conferences, seminars and workshops*

- Using linked data to estimate the prevalence of dementia in Australian women. Waller M, Mishra G & Dobson A. *The Farr Institute 2015 International Conference*, St Andrews, Scotland, 26 - 28 August 2015.

- The Australian Longitudinal Study on Women's Health (ALSWH): Advantages and challenges of linking longitudinal survey data with medical administrative databases. Waller M, Jones M & Mishra G. *National Centre for Longitudinal Data: Longitudinal Data Conference 2016*, Canberra, ACT, 25 - 27 October 2016.
- The Centre for Longitudinal and Life Course Research Showcase. Dobson A, Mishra G, Chung H-F, Waller M & Jones M. *UQ School of Public Health Seminar Series*, Herston, Qld, 9 May 2017.

Project: A679	Pattern of medication use in women with dementia
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Melissa Harris – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder – School of Medicine and Public Health, The University of Newcastle</li> <li>• Kailash Thapaliya – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Dementia is a prevalent condition among older adults that particularly affects women. Dementia and its complications have wider ranging impacts on the individual including reduced quality of life. The way in which medication is used contributes to health outcomes for women with dementia (including disease onset) is critical. This research project will utilize data from Australian Longitudinal Study on Women's Health (ALSWH) 1921-26 cohort to determine association between medications used by women with dementia.

### **CARDIOVASCULAR DISEASE/HYPERTENSION**

Project: A663	The association between menstrual symptoms and hypertension among young Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Hsin-Fang (Evelyn) Chung - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Isabel Ferreira de Sousa - The University of Wollongong</li> </ul>

High blood pressure, also known as hypertension, is a major risk factor for cardiovascular disease including stroke, coronary heart disease, and heart failure. Previous studies showed that around 20-40% of young Australian women experience menstrual symptoms including premenstrual syndromes

(PMS) and pain, irregularity, and heavy bleeding during menstrual periods. Women with menstrual symptoms are more likely to have elevated levels of inflammatory markers, and chronic inflammation might lead to the development of hypertension. Therefore, this study aims to investigate whether menstrual symptoms are associated with hypertension in young Australian women.

Project: A669A	Association between vasomotor symptoms of menopause and cardiovascular disease.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Yvonne Van der Schouw - University of Utrecht</li> <li>• Veerle Dam - Julius Centre, University Medical Center Utrecht</li> </ul>

Cardiovascular disease is still the leading cause of death in the Western world. It has been suggested that menopause might influence cardiovascular disease, for example through vasomotor symptoms like hot flushes and night sweats. Several recent studies showed that women with vasomotor symptoms have a worse cardiovascular profile (higher LDL- cholesterol, higher blood pressure etc.) compared with women without vasomotor symptoms. However, only three studies investigated the association between vasomotor symptoms and cardiovascular disease, showing opposite results. Therefore, this study wants to further investigate the association between vasomotor symptoms and cardiovascular disease.

**Research outcomes:**

- Oral presentation at *WEON* conference, Bilthoven, the Netherlands, 7-9 June 2018.

### 11.1.2 Health service use and systems

Project: A444A	Hospital use of women 85+
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Hal Kendig - Centre for Research on Ageing, Health &amp; Wellbeing, Australian National University</li> <li>• Befikadu Wubishet - Faculty of Health and Medicine, The University of Newcastle</li> </ul>

More women than ever are living past the age of 85 in Australia, but little is known about the nature of their hospital service use, hospital experience and hospital outcomes. Increasing age alone is a risk factor for hospitalisation and less optimal outcomes, but other factors such as demographics and comorbidities also contribute to these experiences. As the aging population places increased demand on health services and resources, the importance of understanding the details of their hospital use is paramount. This project will investigate reasons for hospital admission and how age, demographics and comorbidities may influence the risks of hospitalisation, hospital use and hospital outcomes among older women.

#### Research outcomes:

##### *Publications*

- Patterns of hospitalization risk for women surviving into very old age: Findings from the Australian Longitudinal Study on Women's Health. Dolja-Gore X, Harris M, Hendig H & Byles JE. *Medical Care*, 2017, 55 (4); 352-361.
- End of life hospitalisations differ for older Australian women according to death trajectory: A longitudinal data linkage study. Harris ML, Dolja-Gore X, Kendig H, Byles JE. *BMC Health Services*, 2016, 16 (1); 484.
- First incident hospitalisation for Australian women aged 70 and beyond: A 10 year examination using competing risks. Harris ML, Dolja-Gore X, Kendig H & Byles JE. *Archives of Gerontology and Geriatrics*, 2016, 64; 29-37.

Conferences, seminars and workshops:

- Determinants of overnight hospital admissions for Australians aged 85+ in their last year of life. Dolja-Gore X, Harris ML, Kendig H & Byles J. *12<sup>th</sup> Annual 45 and Up Study Collaborators' Meeting*, Sydney, NSW, 12 November 2015.
- Hospital use at the end of life for older women: moving beyond cancer. Harris L. *Deeble Institute's Think Tank on preventable hospitalisations*, Melbourne, Vic, 23 May 2017.

Project: A561	Access to medical specialists and GPs on the receipt of specialist surgery and cancer survival for NSW women with breast, lung, colorectal and ovarian cancer : A data linkage study.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof John Attia - School of Medicine and Public Health, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Prof Jennifer Martin - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Elizabeth Tracey - Hunter Medical Research Institute (HMRI), The University of Newcastle</li> <li>• Prof Robert Sanson-Fisher - Hunter Medical Research Institute (HMRI), The University of Newcastle</li> <li>• Prof Stephen Ackland - Medical Oncology, The University of Newcastle</li> </ul>

Previous NSW studies using linked cancer Registry and hospital data (geocoded to enable the calculation of straight line distance in kilometres) have shown that distance to specialist services influences the hospital of treatment and the likelihood of surgery. With increasing distance to public specialist hospitals patients were more likely attend general hospitals for their care and were less likely to have surgery. The aims of this study is to examine patient and health service factors prior to and after a diagnosis of cancer in Australian women to determine the impact on rural residence and access to specialist surgical care and the likelihood of appropriate surgery. Cancers of the breast, bowel, lung and ovary will be examined. For breast and bowel cancers screening histories will also be included.

Project: A674	Understanding health care use, costs, and quality of life for older people with common cardiac dysrhythmias
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Robert Cumming - The University of Sydney</li> <li>• Dr Shazia Abbas - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project aims to assess quality of life and patterns of health care use by older people who have atrial fibrillation (AF). People with this common condition, receive long term treatment for a largely asymptomatic condition, with uncertain risks and benefits. This project will use linked population data from longitudinal studies (ALSWH and 45 and Up) and health services (hospital and Medicare) to examine economic and social impacts of AF in terms of health care use, costs, and the social participation and quality of life of people with AF.

Project: A676	Use of GP other Medicare and hospital services by people with dementia.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Robert Sanson-Fisher - Hunter Medical Research Institute (HMRI), The University of Newcastle</li> <li>• Prof Colette Browning - Primary and Allied Health Care, Monash University</li> <li>• Dominic Cavenagh - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>

The General Practitioner (GP) is the cornerstone of medical care for people with dementia, and central to much of the care for people with dementia. The GP usually knows the person with dementia well, having cared for them for many years, and are often the first clinician to become aware of the person's concerns about cognitive decline. Subsequent to diagnosis, the ongoing care and medical management of dementia is also principally coordinated and monitored by the GP, in partnership with the person and their family, and with specialist consultation. This study will assist in identifying use of GP consultations and other services eligible for Medicare rebates by women with dementia, and examine use these services, and health outcomes for women with dementia.

Project: A712	Analyses of longitudinal data to investigate populations using MBS after-hours services
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Jason Brandrup - Health Analytics Branch, Australian Government Department of Health</li> </ul>

There has been rapid growth in the use of Medicare Benefits Schedule (MBS) urgent after-hours items for several years. Data from the Australian Longitudinal Study on Women's Health (ALSWH) and the MBS will be used to examine the characteristics of populations using MBS after-hours items and any changes in these characteristics since the 2010-11 financial year. Knowing the users of these services will inform policy and help ensure that the needs of these groups are being met in the most appropriate and cost effective way.

Project: A646	Longitudinal analyses of yoga use and health status among Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Professor David Sibbritt - Faculty of Health, University Technology Sydney</li> <li>• Dr Holger Cramer - Department of Internal and Integrative Medicine, University of Duisburg-Essen</li> <li>• Dr Romy Lauche - Australian Research Centre in Complementary and Integrative Medicine, University Technology Sydney</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This project examines the prevalence of yoga use over time, continuity of yoga use and predictors for (dis-)continuation. This project also examines the longitudinal associations of yoga/meditation with

health status or well-being among participants with diagnosed mental health or physical conditions such as anxiety, depression, hypertension, arthritis or back pain.

Project: A667	Yoga and optimism: The associations between mental health measures and yoga use
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Jon Adams - School of Public Health, University Technology Sydney</li> <li>• Prof David Sibbritt - Faculty of Health, University Technology Sydney</li> <li>• Dr Holger Cramer - Department of Internal and Integrative Medicine, University of Duisburg-Essen</li> <li>• Dr Romy Lauche - Australian Research Centre in Complementary and Integrative Medicine, University Technology Sydney</li> <li>• Dennis Anheyer - Department of Internal and Integrative Medicine, University of Duisburg-Essen</li> <li>• Dr Jan Boehnke - School of Nursing and Health Sciences, University of Dundee</li> <li>• Prof Timothy Croudace - School of Nursing and Health Sciences, University of Dundee</li> <li>• Dr Lisa Uebelacker, Brown University</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

There is promising evidence that yoga might be beneficial for coping with negative life events. We will determine the associations of yoga use with optimism and perceived control in life, psychological well-being (incl. anxiety, depression, and stress), and satisfaction among mid-aged Australian women. We will further determine whether yoga mediates the associations between traumatic life events and mental health.

**Research outcomes:**

- How do yoga and meditation influence the relationship between negative life events and depression? A cross sectional analysis of 8009 women. Lauche R, Anheyer D, Sibbritt D, Adams J, Cramer H. *Meeting of the European Health Psychology Society*, Galway Ireland, 21-25 August, 2018.
- Do yoga and meditation moderate the association between negative life events and depression? A cross sectional analysis of 8009 women. Lauche R, Anheyer D, Sibbritt D,

Adams J, Cramer H. *International Conference on Integrative Medicine and Health*, Baltimore, USA, 8-12 May 2018.

Project: A659	Generational changes in CM utilisation
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Jon Adams - School of Public Health, University Technology Sydney</li> <li>• Professor David Sibbritt - Faculty of Health, University Technology Sydney</li> <li>• Dr Jon Wardle - Faculty of Health, University Technology Sydney</li> <li>• Dr Amie Steel - Health Services Research, University Technology Sydney</li> <li>• Dr Romy Lauche - Australian Research Centre in Complementary and Integrative Medicine, University Technology Sydney</li> <li>• A/Prof Niki Munk - Department of Health Sciences, School of Health and Rehabilitation Sciences, Indiana University</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This project will examine the prevalence of complementary medicine use in two different cohorts to examine potential generational changes in complementary medicine use in women in their early 20s.

Project: A671	When the clock is ticking: Impact of the extended Medicare safety net on the uptake of assisted reproductive technology
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Kees Van Gool - Centre for Health Economics Research and Evaluation, University of Technology Sydney</li> <li>• (Jenny) Chun Yee Wong - Centre for Health Economics Research and Evaluation, University of Technology Sydney</li> <li>• Dr Megan Gu - Centre for Economic Research and Evaluation, University of Technology Sydney</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>

This project investigates the trends in Assisted Reproductive Technology (ART) services usage with the introduction of Extended Medicare Safety Net in 2004 which provided greater subsidy for ART services and the subsequent implementation of caps in 2010 which reduced the subsidy. It also

examines the determinants for women's decision to use ART services including sociodemographic characteristics. We utilise a unique resource by linking the survey data from the Australian Longitudinal Study on Women's Health with national administrative health datasets, Medical Benefits Schedule (MBS) and Pharmaceutical Benefits Schedule (PBS) and then deploying hurdle models to examine the incidence and frequency of ART use among women. The study will shed light on the effect of government policies on ART services in terms of utilisation and will also examine the determinants driving the decision to undertake these services.

**Research outcomes:**

- Preliminary results were presented at *UTS Centre for Health Economics Research and Evaluation (CHERE) internal seminar*, 6 June 2018.

### 11.1.3 Medications

Project: A277	Opioid Use by Australian women: Patterns of use over time and association with physical and mental health and health care use
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Dr Paul Kowal - Study on Global AGEing and Adult Health (SAGE), World Health Organization</li> <li>• Dr Sam Brilleman – School of Public Health and Preventive Medicine, Monash University</li> <li>• Prof Isabel Higgins - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Fiona Blyth - Pain Management &amp; Research Centre, The University of Sydney</li> <li>• Yushi Li - School of Pharmacy, University of Wisconsin</li> <li>• Dr Chris Hayes - Hunter Integrated Pain Service, Hunter New England Health</li> <li>• Amanda McGovern - University of Wisconsin-Madison</li> <li>• Cassie Curryer - Research Centre for Generational Health and Ageing; ARC Centre for Excellence in Population Ageing Research (CEPAR)</li> <li>• Aimee Heili - University of Wisconsin-Madison</li> <li>• A/Prof Anna Kemp - Centre for Health Services Research, The University of Western Australia</li> <li>• Dr Kris Rogers - The University of Sydney</li> </ul>

Prescription of opioids for persistent pain remains controversial due to the potential for significant adverse events, including gastrointestinal problems, mental and physical functional impairment, addiction, and death. Current opioid monitoring systems cannot identify and track individual opioid prescriptions, so the extent of inappropriate prescribing and associated harms in Australia is not currently known. This project aims to: (1) describe patterns of PBS opioids prescriptions for three cohorts of women (in their 30s, 50s and 80s), from 2002 to 2008; (2) examine demographic, psychosocial, health and health care utilisation factors associated with opioid prescription across time;(3) explore related health outcomes (quality of life, disability, falls) over time for opioid users.

#### Research outcomes:

- Opioid use and health in older Australian women. Parkinson L, Brilleman S, Byles J, Blyth F, Hayes C, Higgins I & Robertson J. *College of Problems of Drug Dependence 75<sup>th</sup> Annual Meeting*, San Diego, USA, 15 - 20 June 2013.
- Opioid use and health in older women from the Australian Longitudinal Study on Women's Health. Parkinson L, Brilleman S & Byles J. *The 20<sup>th</sup> IAGG World Congress of Gerontology and Geriatrics*, Seoul, Korea, 23 - 27 June 2013.
- Opioid use and health in older Australian women. Parkinson L, Brilleman S & Byles J. *2014 AAG & ACS Regional Conference - Sharing Care for Older Australians: Working Together*. Port Macquarie, NSW, 5 - 7 March 2014.

Project: A282	Experience of pain and analgesic use by Australian women: What do older women say?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Dr Jane Robertson – School of Medicine and Public Health, The University of Newcastle</li> <li>• Prof Isabel Higgins - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Sarah Jeong – School of Nursing and Midwifery, The University of Newcastle</li> <li>• Dr Sharyn Hunter – School of Nursing and Midwifery, The University of Newcastle</li> <li>• Dr Pamela van der Riet – School of Nursing and Midwifery, The University of Newcastle</li> <li>• Prof Julie Byles - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> </ul>

The aim of this project is to explore the written responses provided by older women in the Australian Longitudinal study with reference to their use of pain relief medications, including opioids. Analgesics, often used in the treatment of pain, can be associated with troubling side effects. This sub study explores what women say about pain medication and opioid use. The comments made by women may provide some important clues about their perceptions of pain medication and opioid use and the context for use within the lives of the women.

### Research outcomes

- Australian Longitudinal Women's Health Study: Issues and concerns about pain amongst older women. Hunter S. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: A305	Implications of anti-cholinergic effects of medicines in older women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Parker Magin - School of Medicine and Public Health, The University of Newcastle</li> <li>• Prof Dimity Pond - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Colin McCowan - Clinical &amp; Population Science &amp; Education, The University of Dundee</li> <li>• Dr Thomas Lo - University of Alberta</li> <li>• A/Prof Christopher Etherton-Beer - Centre for Medical Research, The University of Western Australia</li> <li>• Dr Gillian Caughey - University of South Australia</li> <li>• Dr Allison Thomsen - General Practice Training Coast to Coast, The University of Newcastle</li> <li>• A/Prof Rachael Moorin - Curtin Health Innovation Research Institute, Curtin University</li> <li>• Dr Danijela Gnjidic - Centre for Education and Research on Ageing (CRGH), The University of Sydney</li> <li>• A/Prof Sarah Hilmer - Medicine, Northern Clinical School, The University of Sydney</li> <li>• Prof Andrew McLachlan - Chair of Pharmacy (Aged Care), The University of Sydney</li> <li>• A/Prof Julie Redfern - The George Institute for Global Health</li> </ul>

Many common medicines used by older people have anticholinergic effects – such as dry mouth, constipation, blurred vision, and confusion. This study will establish the role of “anticholinergic burden” from medicines in risk for serious adverse health outcomes in older women, using Australian Longitudinal Study on Women's Health data. The findings will have important implications for

prescribing practice and for prevention of disability and adverse events among community-living older people.

**Research outcomes:**

*Publications*

- Anticholinergic burden in older women: Not seeing the wood for the trees? Parkinson L, Magin P Thomson, A, Byles J, Caughey, G, Etherton-Beer C, Gnjjidic D, Hilmer S, Lo T, McCowan C, Moorin, R & Pond D. *Medical Journal of Australia*, 2015, 202 (2); 91-94.

*Conferences, seminars and workshops*

- Anticholinergic medicines burden in older women. Parkinson L, Magin P, Byles J, Caughey G, McCowan C, Pond D & Thomson A. *National Medicines Symposium 2014*, Brisbane, Qld, 21 - 23 May 2014.
- Cumulative anticholinergic medicines burden in older women. Parkinson L, et al. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: A723	Are older women prescribed Amiodarone receiving recommended thyroid function tests?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Kichu Nair - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Amiodarone is one of the most popular antiarrhythmic drugs prescribed in Australia. It is commonly used to treat atrial fibrillation, ventricular tachycardia and prescribed to patients at high risk of cardiac death. Amiodarone however has a number of adverse effects and is therefore only prescribed when necessary. Due to its structural similarities with thyroxine, it is recommended that thyroid function tests be conducted every six months to check for thyroid dysfunction. These guidelines however are not well adhered to by health professionals. Therefore this project will examine the risk factors for non-adherence to thyroid function testing in older Australian women prescribed Amiodarone.

#### 11.1.4 Mental health

Project: A331A	Emerging adulthood, life transitions, and wellbeing
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Christina Lee - School of Psychology, The University of Queensland</li> <li>• Dr Robert Ware - School of Public Health, The University of Queensland</li> <li>• Richard Hockey – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Libby Holden - School of Psychology, The University of Queensland</li> </ul>

The transition from adolescence to adulthood is more protracted and complex today than for previous generations. Young people spend longer in education and training, and the traditional transitions of early adulthood – leaving the family home, adult employment, marriage/relationship, and parenthood – tend to occur later, in a range of sequences, or indeed not at all. This project uses the longitudinal strengths of the ALSWH to describe the transitions and sequences of the 1973-1978 cohort over Surveys 1 to 6, and the relationships between different patterns of transition and several measures of psychological well-being. It also includes analyses of health behaviours, physical health, and health service use.

#### Research outcomes:

##### *Publications:*

- Longitudinal trajectory patterns of social support: correlates and associated mental health in an Australian national cohort of young women. Holden L, Dobson A, Ware R, Hockey R & Lee C. *Quality of Life Research*, 2015, 24 (9); 2075-2086.
- Trajectories of mental health over 16 years amongst young adult women: The Australian Longitudinal Study on Women's Health. Holden L, Ware R & Lee C. *Developmental Psychology*, 2016, 52 (1); 164-175.
- Mental health-related quality of life and the timing of motherhood: A 16-year longitudinal study of a national cohort of young Australian women. Holden L, Hockey R, Ware RS & Lee C. *Quality of Life Research*, 2018. DOI: 10.1007/s11136-018-1786-7.

##### *Conference presentations, seminars and workshops:*

- Correlates of depression: Do they change with life stage? Holden L & Lee C. *7<sup>th</sup> World Conference on the Promotion of Mental Health and the Prevention of Mental and Behavioural Disorders*, Perth, WA, 17-19 October 2012.
- Predicting trajectories of mental health in a national cohort of young Australian women. Holden L, Lee C & Ware R. *5<sup>th</sup> World Congress on Women's Mental Health*, Lima, Peru, 4 - 7 March 2013.

- The timing of motherhood is associated with poor mental health. Holden L, Lee C & Ware R. *7<sup>th</sup> Australian Women's Health Conference*, Sydney, NSW, 7 - 10 May 2013.
- Some correlates of depression vary at different life stages during women's early adulthood. Holden L & Lee C. *Australasian Epidemiological Association Annual Scientific Meeting 2013: Life Course Approach to Health and Wellbeing*, Brisbane, Qld, 20 - 22 October 2013.
- Social stratification and women's health in Australia. (Keynote Address). Lee C. *The International Conference on Social Stratification*, Tokyo, Japan, 31 August - 1 September 2013.
- Longitudinal relationship trajectories of young Australian women: Are they associated with physical and mental health? Lee C. *30<sup>th</sup> Conference of the European Health Psychology Society*, Aberdeen, Scotland, 23-27 August 2016.
- Women's health in context. (Invited Keynote Address). Lee C. *4<sup>th</sup> International Congress of Behavioral Medicine*, Melbourne, Victoria, 7-12 December 2016.

Project: A360A	Predictors of mental health services utilisation and costs for Australian Women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Catherine D'Este - National Centre for Epidemiology and Population Health (NCEPH), The Australian National University</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

The aim of this research is to investigate the impact and utilisation of the 'Better Access Scheme' on health services among Australian women with mental health conditions. The research will provide in-depth analysis on the differing social, economic and health characteristics for women with mental health conditions who do and do not use the 'Better Access Scheme' and identify inequalities and possible inequities on health service use/costs and morbidity.

#### **Research outcomes:**

##### *Publications:*

- Mental health service use: Is there a difference between rural and Non-rural women in service uptake? Dolja-Gore X, Loxton D, D'Este C & Byles J. *The Australian Journal of Rural Health*, 2014, 22 (3); 92-100.

- Differences in use of government subsidised mental health services by men and women with psychological distress: A study of 229,628 Australians aged 45 years and over. Dolja-Gore X, Loxton D, D'Este C & Byles J. *Community Mental Health Journal*, 2018. (In press) DOI: 10.1007/s10597-018-0262-8

*Conferences, seminars and workshops:*

- How effective are Australian mental health counselling services for women with poor mental health? Dolja-Gore X. *International Society of Pharmacoeconomics and Outcomes Research*, Montreal, Canada, 31 May - 4 June 2014.
- Are younger Australian women with poor mental health receiving counselling services and how effective are they? Dolja-Gore X, Loxton D, D'Este C & Byles J. *Population Health Congress 2015*, Hobart, Tas, 6 - 9 September 2015.
- How effective are Australian mental health counselling services for women with poor mental health? Dolja-Gore X, Loxton D, D'Este C & Byles J. *National Centre for Longitudinal Data: Longitudinal Data Conference 2016*, Canberra, ACT, 25 - 27 October 2016.

Project: A524	Psychological implications of the grandmother hypothesis
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Ms Marlise Hofer - University of British Columbia</li> <li>• Prof Mark Schaller - University of British Columbia</li> </ul>

Our idea concerns the psychological consequences of menopause. It stems from the "grandmother hypothesis" which states that losing the ability to have children may actually increase women's inclusive fitness because after menopause they no longer need to divide resources between existing offspring and the production of new offspring. If the grandmother hypothesis is true, we would expect menopause to create a dramatic shift in a women's psychological outlook. We would expect the allocation of mental and disposable resources to shift away from self and toward kin.

Project: A560A	Longitudinal patterns of depression and/or anxiety
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Christina Lee - School of Psychology, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Robert Ware - School of Public Health, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Richard Hockey – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Libby Holden - School of Psychology, The University of Queensland</li> <li>• Prof Harvey Whiteford – School of Psychiatry, The University of Queensland</li> <li>• Dr Meredith Harris – School of Public Health, The University of Queensland</li> <li>• Dr Alize Ferrari - School of Public Health, The University of Queensland</li> </ul>
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This study aims to identify factors predicting improvements or deterioration in symptoms of depression and / or anxiety over time (using the CESD-10 and GADanx) in the 1973-78 and 1946-51 cohorts. It also aims to explore the patterns of moving into and out of sub-threshold and more severe symptoms of anxiety and / or depression over time. We will also explore factors predicting help-seeking behaviour specific to symptoms of anxiety or depression. This separate analysis is required because help-seeking is strongly correlated with both the outcome of interest and several key predictive variables of the earlier work.

Project: A617	The impact of poor mental health on health and health service use outcomes for older women with multimorbidity.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof John Attia - School of Medicine and Public Health, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Christopher Oldmeadow - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, Hunter Medical Research Institute</li> </ul>

This project will examine the role of poor mental health in health, and healthcare outcomes for older women with multimorbidity. In particular, we will examine whether poor mental health contributes to poorer physical health outcomes for these women. The project will link data from a range of

administrative sources (e.g. the Admitted Patient Data Collection, Medicare Benefits Scheme, Pharmaceutical Benefits Scheme, and National Death) to self-reported survey data for the 1921-1926 and 1946-1951 cohorts.

Project: A658	The role of dietary indices in depression: a meta-analysis
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Liset Elstgeest - Department of Health, VU University Amsterdam</li> <li>• Dr Danielle Schoenaker - Cancer Council Victoria</li> <li>• Dr Mary Nicolaou - Department of Public Health, University of Amsterdam</li> </ul>

An increasing number of studies indicate that a healthy diet may lower the risk of depression. However, critical reviews of the literature have failed to find consistent associations across studies. To clarify the potential relationship between diet and depression, further research is needed that uses standardised methods. Therefore, the aim of this study is to examine the association between dietary patterns and depression in the mid-age cohort of ALSWH, and to combine these results with findings from comparable studies to determine the consistency of the association between diet and depression across different populations.

**Research outcomes:**

- Nicolaou M, Vermeulen E, Elstgeest L, Knuppel A, Colpo M, Schoenaker D, Gibson-Smith D et al. A meta-analysis of the role of a priori dietary indices in depression among 7 cohorts: The MoodFOOD project. *The IUNS 21<sup>st</sup> International Congress of Nutrition (ICN)*, Buenos Aires, Argentina, 15-20 October 2017.

Project: A694	Brain-gut vs gut-brain: Longitudinal patterns of gastrointestinal and mental health disorders
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Natasha Koloski - Office PVC (Health), The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Nicholas Talley - Faculty of Health, The University of Newcastle</li> <li>• A/Prof Mike Jones - Psychology Department, Macquarie University</li> <li>• Dr Alissa Beath - Macquarie University</li> <li>• Dr Anastasia Ejova - Maquarie University</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Marjorie Walker - Hunter Medical Research Institute, The University of Newcastle</li> <li>• Lana Mawass - Macquarie University</li> <li>• Alol Elba – Macquarie University</li> </ul>
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Functional gastrointestinal disorders (FGIDs, e.g. irritable bowel syndrome) are often comorbid with mood disorders, although we do not fully understand why. Some existing research has investigated which type of diagnosis (FGID vs psychological) most commonly comes first, though these have been limited in time frame or patient samples only and have only been able to evaluate a limited number of moderators of the order of incidence. Using the nationally-representative ALSWH sample, we hope to identify whether mood disorders precede FGID diagnosis more often than FGID diagnosis precede mood disorders, and what psychological or social factors predict the order in which diagnosis of an FGID and a mood disorder occurs.

Project: A695	A longitudinal investigation of the somatisation construct in a nationally representative sample of younger women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Natasha Koloski - Office PVC (Health), The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Nicholas Talley - Faculty of Health, The University of Newcastle</li> <li>• A/Prof Mike Jones - Psychology Department, Macquarie University</li> <li>• Dr Alissa Beath - Macquarie University</li> <li>• Dr Anastasia Ejova - Macquarie University</li> <li>• Prof Marjorie Walker - Hunter Medical Research Institute, The University of Newcastle</li> <li>• Mallory Devlin - Macquarie University</li> </ul>

Somatisation is classically thought of as the physical expression of psychological distress, yet it is typically measured without reference to distress. Instead, it is measured in terms of whether one is “bothered” “a lot” as opposed to “a little” or “not at all” by each of a set of somatic symptoms (stomach pain, back pain, chest pain, etc.) In assessing somatic-symptom severity on a similar scale at each time point, while also assessing a host of psychological and health indicators, the ALSWH enables the investigation of whether, over time, psychosocial factors do predict somatic-symptom severity over and above health-related factors (e.g., whether one suffers from a serious health condition).

**Research outcomes:**

- Longitudinal predictors of somatisation in a large-scale population-representative sample of women: Psychological or physiological? *Australian Gastrointestinal Research Alliance Quarterly Meeting*, Newcastle, February, 2018.
- Strong evidence somatization measures based on symptom checklists are more reflective of psychological rather than physical health: Important consequences for gastroenterology research and practice (Poster). *United European Gastroenterology Week*, Vienna, October, 2018.

Project: A702	History of maternal stress and depression and relationship with child development
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Virginia Slaughter - School of Psychology, The University of Queensland</li> <li>• Dr Katrina Moss - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

One of the key founding purposes of the MatCH substudy is to investigate the history of maternal health and its link with child outcomes. This set of analyses will investigate the history of maternal depression and related characteristics and how this predicts child development. It will combine data from ALSWH along with new data collected on the children of the 1973-1978 cohort, along with linked data from the AEDC and NAPLAN. (Note: it is proposed to do a similar set of analyses with maternal perceived stress).

Project: A722	Prevention and early intervention for maternal mental illness: a research program that will inform policy and clinical practice.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Nicole Reilly - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>

In Australia, local, state and national initiatives for maternal mental health, such as the NSW Safe Start initiative and National Perinatal Depression Initiative, have focused on prevention and early intervention for nearly two decades. The aims of this research are to 1) examine changes in mental health service use and psychological wellbeing among women who gave birth in Australia over the previous 20 years, 2) evaluate the impact of key perinatal- specific mental health initiatives on these outcomes, and 3) examine adherence to best practice guidance for the prevention and management of maternal mental health, and to identify barriers and facilitators to adherence.

**Research outcomes:**

- Prescribing patterns for sodium valproate among Australian women of childbearing age: 2003-2015. Reilly N. *St John of God Burwood Hospital Grand Rounds*, Sydney, 20 July 2018.
- Prevention and early intervention programmes for maternal mental health. Reilly N, Loxton D. *Emerging Health Policy Research Conference*, Menzies Centre for Health Policy, Sydney, 26 July 2018.

### 11.1.5 Ageing

Project: A101A	Change in health status and health care use for women who have and have not had health assessments.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Kichu Nair – School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project has received NHMRC Project Grant funding to evaluate the uptake, outcomes and costs of the 75+ Health Assessment, part of the Enhanced Primary Care Items introduced to Medicare in November 1999. Data collected via ALSWH linked to Medicare data will be used to examine patterns of use of the 75+ health assessment items, outcomes and associated health care use and costs. Advanced statistical techniques such as propensity score methods will be used to assess health outcomes associated with use of the 75+ items to compare women who do and do not have assessments in terms of health related quality of life, admission to residential aged care and mortality

#### Research outcomes:

##### Publications:

- Uptake, prevalence and predictors of first-time use for the 75+ Health Assessment Scheme. Dolja-Gore X, Tavener M, Majeed T, Nair BR & Byles JE. *Australian Journal of Primary Health*, 2017, 23 (5); 476-481.

##### Conferences, seminars and workshops:

- Estimating the effect of health assessments on physical functioning and mortality for women aged 75 years and older. Dolja-Gore X. *Australasian Epidemiological Association (AEA) 23<sup>rd</sup> Annual Scientific Meeting*, Canberra, ACT, 14 - 16 September 2016.
- Uptake and effectiveness of preventive health assessments: A study of 11,726 older Australian women. Byles J, Dolja-Gore X, Nair K, Tavener M, Chojenta C & Mishra G. *21<sup>st</sup> IAGG World Congress of Gerontology and Geriatrics*, San Francisco, United States of America, 23-27 July 2017.

Project: A614	Narratives of health: Comparing 'early' and 'late' adopters of the 75+ Health Assessments.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, The University of Newcastle</li> <li>• Prof Kichu Nair - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Mr Ryan Tuckerman - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This work forms part of a NHMRC funded project evaluating the uptake, outcomes and costs of the 75+ health assessments introduced as Enhanced Primary Care Medicare items in 1999. We will conduct a qualitative analysis of free-text comments recorded by women from the 1921-26 ALSWH birth cohort, who have and have not taken up the 75+ Health Assessment option as part of the Enhanced Primary Care package.

Project: A383	Achieving Healthy Ageing: The Impact of Lifestyle Factors on Longevity and Health in Later Life.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Prof Carol Jagger - Institute of Ageing and Health, Newcastle University</li> </ul>

Healthy ageing is a policy imperative for ageing populations. Ideally, current and future populations of older people will not only live longer, but with limited physical disability and reduced need for services. Health promotion across the life course is thought to be a critical step in achieving this goal of healthy ageing. In this analysis, we examine factors associated with survival and maintenance of good, very

good or excellent self rated health among 12431 women in the Australian Longitudinal Study on Women's Health who were born in 1921-26. The factors of interest are baseline age, education, marital status, self-reported conditions, smoking, BMI, physical activity, moderate consumption of alcohol.

**Research outcomes:**

- Body Mass Index and Healthy Life Expectancy in old and very old women. Leigh L, Jagger C & Byles J. *British Journal of Nutrition*, 2016, 116 (4); 692-699.

Project: A384A	Salutogenesis and changes in self-rated health
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Cassie Curryer - Research Centre for Generational Health and Ageing; ARC Centre for Excellence in Population Ageing Research (CEPAR), The University of Newcastle</li> <li>• Ryan Tuckerman - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

**Research outcomes:**

- Inspired by ageing: Observations from 12,432 women and one researcher (ACH Group Sir Keith Wilson Oration). Byles J. *SA Gerontology Conference 2012: The Ageing Odyssey, It's All About the Journey*, Adelaide, South Australia, 14 September 2012.
- Applying the salutogenic model for better health outcomes in older Australian women. Tavener M. *47<sup>th</sup> Australian Association of Gerontology National Conference "50 not out. Aiming for a century"*, Adelaide, SA, 26 - 28 November 2014.
- Exploring salutary factors influencing women's health (Plenary address). Tavener M. *Optimising health: Salutogenic approaches to health practice, policy, research and education.* University of Canberra, Canberra, ACT, 26 - 27 October 2016.
- A salutogenic analysis of health in older women : Using applied inductive thematic analysis. Tavener M. *Priority Research Centre for Generational Health and Ageing Research Methods Workshop*, Newcastle, NSW, 23 July 2015.

Project: A416A	A life-course approach to physical functioning
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Prof Dorly Deeg - LASA, EMGO+ Institute</li> <li>• Dr John Beard - Department of Ageing and Life Course Health, World Health Organisation</li> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

In 1997, Kalache & Kickbusch published a report<sup>1</sup> describing the Ageing and Health program of the World Health Organization (WHO). In this report they hypothesized that functional capacities, such as muscle strength and respiratory capacity, increase and reach a maximum during early adulthood and from there on decline during mid an older adulthood at a rate that differs according to levels of fitness. In this study, the aim is to verify what is shown in the figure – is there really a difference in the rate of decline in physical function for people with different fitness levels and how many years difference does this make to reaching the disability threshold?

1: The world report on ageing and health: a policy framework for healthy ageing. Beard J, Officer A, de Carvalho A, Sadana R, Pot A M, Michel J-P, Lloyd-Sherlock P, Epping-Jordan J, Peeters G, Mahanani W R, Thiyagarajan J A & Chatterji S. *The Lancet*, 2016, 2145-2154.

### Research outcomes:

#### Publications:

- Beard JR, Pot AM, Peeters G. (2018). Chapter 11. Implications of population ageing for societies and governments. In: *Oxford Textbook of Geriatric Medicine*. JP Michel, BL Beattie, FC Martin & J Walston. 3<sup>rd</sup> edition. Oxford, Oxford University Press: 77-81.

#### Conferences, seminars and workshops:

- Lifestyle and socio-economic factors influence the adult life-course of physical function in women. Peeters G, Beard J, Deeg D, Tooth L, Brown W & Dobson A. *68<sup>th</sup> Annual Scientific Meeting of The Gerontological Society of America*, Orlando, USA, 18 -22 November 2015.

Project: A543	SF-36 reference values reflecting level of independence in older women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• A/Prof Deirdre McLaughlin - Melbourne School of Population and Global Health, The University of Melbourne</li> <li>• Dr Paul Gardiner - Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Wellbeing, or quality of life, is an important outcome used in many health care studies, particularly in trials where different types of treatment are compared in terms of their effectiveness. The short form-36 (SF-36) is a widely used, questionnaire that measures health-related wellbeing. The questionnaire covers items related to 7 domains of wellbeing and for each domain, the scores ranges from 0 to 100, with a score of 100 indicating optimal wellbeing. To be able to interpret the scale scores and differences in scores between groups better, reference values are required. This study provides reference values by relating SF-36 scores to level of independence in daily functioning in older women.

Project: A550	House and Home: Pathways and alternatives to residential aged care.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Cassie Curryer - Research Centre for Generational Health and Ageing; ARC Centre for Excellence in Population Ageing Research (CEPAR), The University of Newcastle</li> </ul>

Most people want to age in their own home. Community aged care supports this need, preserving residential care for when in-home support is insufficient. This study follows a large group of women as they age from their 70's through their 80's and looks at changes in housing, social and living

arrangements over time, how these changes correspond to health and care needs, the care services and support that women living independently in the community receive, and whether and when women move into residential aged care.

## Research outcomes

### Publications:

- Changes in housing among older women: Latent class analysis of housing patterns in older Australian women. Byles J, Curryer C, Vo K, Forder P, Loxton D & McLaughlin D. *Urban Studies*, 2016; 1-17.
- Cumulative incidence of admission to permanent residential aged care for Australian women – A competing risk analysis. Forder P, Byles J, Vo K, Curryer C & Loxton D. *Australian and New Zealand Journal of Public Health*, 2017, 42 (2); 166-171.

### Conferences, seminars and workshops:

- House and home: Built environment for ageing well (Symposium). Byles J. *International Federation on Ageing - 13<sup>th</sup> Global Conference on Ageing*, Brisbane, Qld, 21-23 June 2016.
- "You can't have home care if you don't have a home" - A look at the intersection between housing and aged care in later life. Byles J. *Australian Association of Gerontology Webinar Series*, 13 July 2016.
- Home and care: Analysis of 12 years of data from the Australian Longitudinal Study on Women's Health. Byles J. *21<sup>st</sup> IAGG World Congress of Gerontology and Geriatrics*, San Francisco, United States of America, 23-27 July 2017.
- Housing for older Australians: Changing capacities and constrained choices. Byles J. *International Ageing Urbanism Colloquium*, Singapore, 26-27 October 2017.
- Late life changes in housing: Choices, enablers and barriers to ageing in place (Symposium). Home and care: an example of what we know – analysis of 12 years of data from the Australian Longitudinal Study on Women's Health. Byles J, Tavener M. *Australian Association of Gerontology and Geriatrics 50<sup>th</sup> Annual Conference*, Perth, WA, 7-10 November 2017.

Project: A586	Health expectencies of frailty and dementia
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Paul Gardiner - Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• Prof Carol Jagger – Institute of Ageing and Health, Newcastle University (UK)</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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One of the great public health successes of the past century has been the increase in the human lifespan. As the population ages, there is a need to determine not just the quantity of years remaining, but also the quality of those years. Dementia and frailty are two conditions that can have negative consequences on quality of life and the ability to look after oneself. Determining the number of years living with and without those conditions, and the effect of socio-demographic and lifestyle factors can contribute to the policy debate about healthy ageing.

**Research outcomes:**

- Sarcopenia and frailty in older women: Predictors, patterns and impacts on health service use. Gardiner P. *The Global Acute Care Excellence Forum*, Brisbane, Qld, 20-21 February, 2017.
- The impact of physical activity and sitting time on frailty free life expectancy. Gardiner P. *21<sup>st</sup> IAGG World Congress of Gerontology and Geriatrics*, San Francisco, United States of America, 23-27 July 2017.
- Sarcopenia and frailty in older women: Predictors, patterns and impacts on health service use. Gardiner P. *16<sup>th</sup> Annual Meeting of the International Society of Behavioral Nutrition and Physical Activity*, Victoria, Canada, 7-10 June 2017.

Project: A619	Antidepressants and falls in older women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Paul Gardiner – Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• A/Prof Dori Rosenberg – Group Health Research Institute, Seattle</li> <li>• Dr Zachary Marcum – University of Washington</li> </ul>

Falls and depressive symptoms are common in older adults and pose a significant burden on the healthcare system and society. While depressive symptoms and use of certain types of antidepressants are associated with falls, falls risk has not been assessed across all classes of antidepressants or using cumulative exposure of antidepressants over time.

Project: A623	Thinking ahead: How healthy do baby boomer women think they will be?
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Ryan Tuckerman - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Liana Green - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

As Australia's life expectancy is lengthening, baby boomers might be wondering whether a longer life will be lived in better or worse health. In 2006, women from the 1946-51 cohort took part in a sub-study on retirement. As part of the sub-study they were also asked about their present health and what they expected of their health in 20 years. It will be 10 years in 2016 (ie. Half way through their expectation), since the women were asked that question, and a good time to see whether they are 'on track' according to their own health expectations.

Project: A637	The STEP consortium: Strategies for Early Prevention of falls in middle-aged adults
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Natasja van Schoor - EMGO Institute, VU University Medical Center</li> <li>• Dr Rachel Cooper - MRC Unit for Lifelong Health and Ageing, University College London</li> <li>• Prof Rose Anne Kenny - Trinity College Dublin, The University of Dublin</li> </ul>

Falls are a well- known cause of injuries among those aged 65 years and older. Approximately 1 in 3 older adults have a fall at least once per year. Most research has focused on falls in older adults (i.e. over the age of 65), however little attention has been given to the increased risk of falls in middle- aged

adults, which may guide earlier intervention and subsequently a reduction in falls later in life. The aim is to examine risk factors of falls in middle- aged adults using data from four existing cohort studies from Australia, Ireland, the Netherlands and the United Kingdom.

**Research outcomes:**

*Publications:*

- The prevalence of falls in middle-aged adults: results from co-ordinated analyses of harmonised data from four population-based cohort studies. Peeters, van Schoor, Cooper, Tooth, Kenny. *Journal of Frailty Sarcopenia Falls*. 2017. (Published conference abstract) [http://www.jfsf.eu/articles/v03i01\\_035.pdf](http://www.jfsf.eu/articles/v03i01_035.pdf)

*Conferences, seminars and workshops:*

- The Strategies for Early Prevention of Falls (STEP) consortium. Peeters G. *Osteoporosis lunch time seminar series*, VU University Medical Centre, Amsterdam, The Netherlands, 13 March 2017.
- The prevalence of falls in middle-aged adults: Results from co-ordinated analyses of harmonised data from four population-based cohort studies. Peeters, van Schoor, Cooper, Tooth, Kenny. *Falls Frailty Bone Health Conference*, Dublin, Ireland, 9-10 November 2017.

Project: A644	Health and well being among older Australian women before and after cataract surgery.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Mitiku Teshome Hambisa - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project aims to look at how many mid-aged women and older women have reported cataract and cataract surgery and cross-check this (where possible) against hospital and Medicare records, The investigators also plan to examine the health and wellbeing of women prior to reporting cataract surgery and how this may change before and after cataract surgery. The investigators are particularly interested in how cataracts (and cataract surgery) may influence women’s continued ability to drive and quality of life.

Project: A684B	Multimorbidity with dementia
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> </ul>

People with dementia typically have other chronic conditions at the same time. This can affect their use of health services, especially aged care services. The aim of this project is to describe the range of conditions experienced by women with dementia, compared to a matched group of women of the same age who did not have dementia.

**Research outcomes:**

- A poster was presented at the *Australian Dementia Forum 2018*.

Project: A684C	Death certification of elderly women with dementia, and other chronic conditions.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Death certification is difficult for elderly people with multiple chronic conditions. As a result doctors may omit to mention some conditions, such as dementia. However the underlying causes of death recorded on death certificates form one of the foundations of the national health statistics produced by the Australian Bureau of Statistics (ABS), and in turn have significant influence on health policy and service provision. The purpose of this project is to improve understanding of the accuracy of death certification and to help ABS develop better methods of collecting and reporting mortality data.

Project: A578	Language and ageing in Australian women: An exploration of the effects of ageing on language
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Kim Colyvas - School of Mathematical &amp; Physical Sciences, University of Newcastle</li> <li>• Dr Elizabeth Spencer - School of Humanities &amp; Social Sciences, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Gender, Health and Ageing, University of Newcastle</li> <li>• Bill Pascoe - The University of Newcastle</li> <li>• Megan Valentine - Faculty of Science &amp; Information Technology, The University of Newcastle</li> <li>• Patricia Webb - The University of Newcastle</li> <li>• Lucy Bryant - The University of Newcastle</li> <li>• Erin Nolan - The University of Newcastle</li> </ul>

This project investigates the effects of ageing on language. We are interested in determining if language changes as a process of healthy ageing, and, if so, how does language change and are there any general patterns in this change?

**Research outcomes:**

- Language and ageing in healthy late-age adults: What can longitudinal computerised analysis tell us about discourse skills over time? Spencer E. *16th International Clinical Linguistics and Phonetics Conference*, Halifax, Canada, 15-18 June 2016.
- Computerised analysis of written language in healthy ageing women. Webb P, Bryant L & Spencer E. *Speech Pathology Australia 2018 National Conference*, Adelaide Convention Centre (ACC), SA, 27 - 30 May 2018.

Project: A715	Social Interactions and Loneliness in Older Australian Women
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Jane Fisher - Jean Hailes Research Unit, Monash University</li> <li>• Dr Sam Brilleman - Monash University</li> <li>• Dr Thach Tran - Jean Hailes Research Unit, Monash University</li> <li>• Dr Rosanne Freak-Poli - Monash University</li> <li>• Dr Alice Owen - Monash University</li> <li>• Dr Joanne Ryan - Monash University</li> <li>• Dr Joanna McHugh Power - National College of Ireland</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Social isolation and loneliness increase the risk of depression and death and likely represents a greater public health hazard than obesity. Last year, researchers found that Irish and English older adults who reported being not socially isolated but lonely were more likely to have cognitive decline. This example illustrates the adverse health effects of being “alone in a crowd” and how social interactions should be assessed in combination with loneliness. This proposal outlines several key concepts to progress our understanding of how the combination of social isolation and loneliness affects our health and longevity.

Project: A724	Beyond successful ageing: Longevity and healthy ageing among Australian Women.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Dr Paul Kowal - Study on global AGEing and adult health (SAGE), World Health Organization</li> <li>• Ms Lucy Leigh - Hunter Medical Research Institute</li> <li>• Prof Carol Jagger - Institute of Ageing and Health, Newcastle University</li> </ul>

	<ul style="list-style-type: none"><li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li><li>• Dr John Beard - Department of Ageing and Life Course Health, World Health Organisation</li><li>• Dr Mijanur Rahman - The University of Newcastle</li></ul>
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We will examine changes within cohorts of Australian women born 1921-26 and 1946-51 to identify trajectories of Healthy Ageing as defined by WHO, and compare these as to whether or not women can be considered to have achieved Successful Ageing using disease and disability based models of ageing (1). We argue that Healthy Ageing allows for more diversity in ageing trajectories, with interaction between intrinsic capacities and external supports.

### 11.1.6 Reproductive health

Project: A222	Prescribed drug utilisation in women before, during, and after pregnancy
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Mark McEvoy – Centre for Clinical Epidemiology and Biostatistics, The University of Newcastle</li> <li>• Dr Milton Hasnat – School of Medicine and Public Health, The University of Newcastle</li> <li>• Blessing Akombi - The University of Newcastle</li> <li>• Simon McElduff – School of Medicine and Public Health, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This study aimed to determine the prevalence and patterns of prescribed medication use before, during and after pregnancy as little is known about the use of prescribed medications among pregnant women. Data from the ALSWH were linked with Pharmaceutical Benefits Scheme (PBS) data to determine patterns of prescribed medications. From the 1973-78 cohort (aged 27-32) 535 women were selected who had given birth to a child in 2005. The project has completed all analysis and a paper has been submitted for peer review.

Project: A240C	PCOS in Australian women: a chronic illness with psychological, reproductive and metabolic features
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Sarah McNaughton - School of Exercise and Nutrition Sciences, Deakin University</li> <li>• Assoc. Prof. Arul Earnest - Department of Epidemiology and Preventive Medicine, Monash University</li> <li>• Prof Helena Teede - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Eldho Paul - Department of Epidemiology and Preventive Medicine, Faculty of Medicine</li> <li>• A/Prof Lisa Moran - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Melanie Gibson-Helm - Monash Centre for Health Research and Implementation, Monash University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Michelle Blumfield - Faculty of Medicine, Nursing &amp; Health Sciences, Monash University</li> <li>• Dr Anju Joham - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Sanjeeva Ranasinha - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Jacqueline Boyle - Monash Centre for Health Research and Implementation, Monash University</li> <li>• A/Prof Sophia Zoungas - Faculty of Medicine, Monash University</li> <li>• Dr Jessica Grieger - School of Paediatrics and Reproductive Health, The University of Adelaide</li> <li>• A/Prof Barbora de Courten - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Estifanos Baye - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Sean Cain - Monash University</li> <li>• Christie Bennett - School of Clinical Sciences, Monash University</li> <li>• Dr Nadira Kakoly - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Ms Mahnaz Bahri Khomami - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Darren Mansfield - Monash Health</li> <li>• Dr Lin Mo - Monash Health</li> <li>• Prof Deborah Loxton – Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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Polycystic Ovary Syndrome (PCOS) is a common disorder that affects women who are of childbearing age. It is associated with many complications including infertility, but also carries long-term complications such as diabetes, high blood pressure and mood disorders. In this research project, we will compare women with PCOS to those without PCOS over time to try and understand what the key contributing factors are to the development of PCOS, the long-term complications of PCOS and in particular to study the effect of body weight. We will also study the relationship between PCOS status and lifestyle factors and health outcomes at different lifestages including before pregnancy, during pregnancy and post-partum.

**Research outcomes:**

*Publications:*

- Longitudinal weight gain in women identified with Polycystic Ovary Syndrome: Results of an observational study in young women. Teede H, Joham, A, Paul E, Moran L, Loxton D, Jolley D & Lombard C. 2013, *Obesity (Silver Spring)*, 21(8); 1526-1532.

- The contribution of diet, physical activity and sedentary behaviour to body mass index in women with and without polycystic ovary syndrome. Moran LJ, Ranasinha S, Zoungas S, McNaughton SA, Brown WJ & Teede HJ. 2013, *Human Reproduction*, 28(8); 2276-2283.
- Gestational diabetes and Type 2 diabetes in reproductive-aged women with Polycystic Ovary Syndrome. Joham A, Ranasinha S, Zoungas S, Moran L & Teede H, 2014, *Journal of Clinical Endocrinology and Metabolism*, 99(3); E447-E452.
- Contraception use and pregnancy outcomes in women with polycystic ovary syndrome: Data from the Australian Longitudinal Study on Women's Health. Joham A, Boyle J, Ranasinha S, Zoungas S & Teede H. 2014, *Human Reproduction*, 29(4); 802-808.
- Prevalence of infertility and use of fertility treatment in women with Polycystic Ovary Syndrome: data from a large community-based cohort study. Joham A, Teede H, Ranasinha S, Zoungas S & Boyle J. 2015, *Journal of Women's Health*, 24(4); 299-307.
- Hypertension in reproductive-aged women with polycystic ovary syndrome and association with obesity. Joham A, Boyle J, Zoungas S & Teede H. 2015, *American Journal of Hypertension*, 28(7); 847-851.
- Obesity, polycystic ovary syndrome and breastfeeding: An observational study. Joham A, Nanayakkara N, Ranasinha S, Zoungas S, Boyle J, Harrison C, Forder P, Loxton D, Vanky E & Teede H. 2016, *Acta Obstetrica et Gynecologica Scandinavica*, 95(4); 458-466.
- The association of a Mediterranean-style diet pattern with polycystic ovary syndrome status in a community cohort study. Moran LJ, Grieger JA, Mishra G & Teede H. 2015, *Nutrients*, 7(10); 8553-8564.
- Weight management practices associated with Polycystic Ovary Syndrome and their relationships with diet and physical activity. Moran LJ, Brown WJ, McNaughton SA, Joham AE & Teede HJ. 2017, *Human Reproduction*, 32(3); 669-678.
- Asthma in reproductive-aged women with polycystic ovary syndrome and association with obesity. Htet TD, Teede HJ, de Courten B, Loxton D, Real FG, Moran LJ, et al. 2017, *European Respiratory Journal*, 49(5); 1-8.
- Group-based developmental BMI trajectories, polycystic ovary syndrome, and gestational diabetes: a community-based longitudinal study. Sultana N, Earnest A, Moran LJ, Teede HJ & Joham AE. 2017, *BMC Medicine*, 15(1); 195.

*Conferences, seminars and workshops:*

- Body Mass Index as a predictor of Polycystic Ovary Syndrome risk: Results of a longitudinal cohort study. Teede H. *Endo 2010: The 92<sup>nd</sup> Annual Meeting and Expo*, San Diego, USA, 19 - 22 June 2010

- Fertility, ovulation induction and in-vitro fertilisation and use in Polycystic Ovary Syndrome: New results from the Australian Longitudinal Study on Women's Health. Joham A, Ranasinha S, Zoungas S, Loxton D & Teede H. *Endocrine Society of Australia Annual Scientific Meeting*, Sydney, NSW, 28 - 31 August 2011.
- Hypertension in Polycystic Ovary Syndrome: New results from the Australian Longitudinal Study on Women's Health. Joham A, Ranasinha S, Zoungas S, Loxton D & Teede H. *Endocrine Society of Australia Annual Scientific Meeting*, Sydney, NSW, 28 - 31 August 2011.
- The need for a new name for PCOS. Teede H. *15<sup>th</sup> International Congress of Endocrinology*, Florence, Italy, 5 - 9 May 2012.
- Infertility and assisted reproductive technology use in women with polycystic ovary syndrome: Data from the Australian Longitudinal Women's Health Study (poster presentation). Joham A, Teede H, Ranasinha S, Zoungas S & Boyle J. *The Endocrine Society's 95<sup>th</sup> Annual Meeting & Expo*, San Francisco, USA, 15 - 18 June 2013.
- Contraception use and pregnancy outcome in women with Polycystic Ovary Syndrome: Data from the Australian Longitudinal Women's Health Study (poster). Joham A, Boyle J, Ranasinha S, Zoungas S & Teede H. *Endocrine Society of Australia Annual Scientific Meeting*, Sydney, NSW, 25 - 28 August 2013.
- The contribution of diet, physical activity and sedentary behaviour to body mass index in women with and without Polycystic Ovary Syndrome (poster). Moran L, Ranasinha S, Zoungas S, McNaughton S, Brown W & Teede H. *American Society for Reproductive Medicine Conference*, Boston, USA, 12 - 17 October 2013.
- Breastfeeding in women with Polycystic Ovary Syndrome: Data from the Australian Longitudinal Women's Health Study. Nanayakkara N, Joham A, Zoungas S, Loxton D & Teede H. *Endocrine Society of Australia Annual Scientific Meeting*, Sydney, NSW, 25 - 28 August 2013.
- Gestational diabetes and Type 2 diabetes in reproductive-aged women with Polycystic Ovary Syndrome (poster presentation). Joham A, Ranasinha S, Zoungas S, Moran L & Teede H. *World Diabetes Congress*, Melbourne, Vic, 2 - 6 December 2013.
- Hypertension and hypertension in pregnancy in reproductive-aged women with Polycystic Ovary Syndrome (poster presentation). Joham A, Boyle J, Zoungas S & Teede H. *Monash Health Research Week 2013*, Clayton, Vic, 25 - 29 November 2013.
- Longitudinal risk of Type 2 diabetes in reproductive-aged women with Polycystic Ovary Syndrome. Joham A, Ranasinha S, Zoungas S & Teede H. *The Endocrine Society Annual Meeting 2014*, Chicago, USA, 21 - 24 June 2014
- PCOS prevalence, relationship to obesity and management. Teede HJ. *Women's Health Update*, Melbourne, Vic, 24 October 2015.

- PCOS prevalence, relationship to obesity and management. Teede HJ. *Endocrine Society of Australia Seminar*, Sydney, NSW, 1-3 May 2015.
- US PCOS and obesity (symposium). Teede HJ. *Endocrine Society Meeting*, San Diego, USA, 5 - 8 March 2015.
- Prevalence of asthma in reproductive-aged women with Polycystic Ovary Syndrome: New results from the Australian Longitudinal Study on Women's Health. Joham A. *The Endocrine Society Annual Meeting*, Boston, USA, 1-4 April 2016.
- Prevalence of asthma in reproductive-aged women with Polycystic Ovary Syndrome: New results from the Australian Longitudinal Study on Women's Health. Htet T, Teede HJ, de Courten B, Loxton D, Real FG, Moran L & Joham AE. *The Endocrine Society of Australia Annual Scientific Meeting*, Gold Coast, QLD, 21 - 24 August 2016.
- Longitudinal BMI trajectories and gestational diabetes: Relationships in women with and without Polycystic Ovary Syndrome. Sultana NK, Earnest A, Moran LJ, Loxton D, Teede HJ & Joham AE. *Androgen Excess and PCOS Society Annual Meeting*, Lorne, VIC, 10 -12 November 2016.
- Role of obesity in the development of gestational diabetes mellitus in women with and without Polycystic Ovary Syndrome. Sultana NK, Earnest A, Moran LJ, Loxton D, Teede HJ, Joham AE. *Joint Scientific Meeting of The Australian and New Zealand Obesity Society National Conference*, Brisbane, Qld, 19 - 21 October 2016.
- Longitudinal BMI trajectories and gestational diabetes: Relationships in women with and without Polycystic Ovary Syndrome. Sultana NK, Earnest A, Moran LJ, Loxton D, Teede HJ & Joham AE. *Australian Diabetes in Pregnancy Society Annual Scientific Meeting*, Gold Coast, Qld, 26 - 27 August 2016.
- Weight management practices associated with Polycystic Ovary Syndrome and their relationships with diet and physical activity. Moran LJ, Brown WJ, McNaughton SA, Joham AE & Teede HJ. *Nutrition Society of Australia Annual Scientific Meeting*, Melbourne, Vic, 29 November - 2 December 2016.
- Weight management practices associated with Polycystic Ovary Syndrome and their relationships with diet and physical activity. Moran LJ, Brown WJ, McNaughton SA, Joham AE & Teede HJ. *Joint Scientific Meeting of The Australian and New Zealand Obesity Society National Conference*, Brisbane, Qld, 19 - 21 October 2016.
- Weight management practices associated with Polycystic Ovary Syndrome and their relationships with diet and physical activity. Moran LJ, Brown WJ, McNaughton SA, Joham AE & Teede HJ. *The Endocrine Society of Australia Annual Scientific Meeting*, Gold Coast, QLD, 21 - 24 August 2016.

- Weight management practices associated with polycystic ovary syndrome and their relationships with diet and physical activity. Moran L. *15<sup>th</sup> World Congress on Public Health*, Melbourne, Vic, 3-7 April 2017.
- Longitudinal BMI trajectories and gestational diabetes: Relationships in women with and without PCOS. Joham A. *2<sup>nd</sup> Annual Meeting of the Centre for Research Excellence in Polycystic Ovary Syndrome*, Lorne, VIC, 9 - 10 November 2016.
- The impact of obesity on the incidence of type 2 diabetes mellitus among women with polycystic ovary syndrome. Kakoly NS, Earnest A, Teede HJ, Moran LJ, Loxton D, Joham AE. *American Diabetes Association Scientific Sessions*, Orlando, Florida USA, June 22 - 26, 2018.

Project: A254D	Characteristics and birth outcomes of public and private patients in NSW
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Jananie William - School of Finance, Australian National University</li> <li>• Dr Bronwyn Loong - Australian National University</li> </ul>

Previous studies have found that patient status (private or public) and whether a woman has private health insurance are important predictors of maternal hospital costs (covered in A254B, William (2016)). This study delves deeper into the differences between private and public patients to explain why these factors contribute significantly to cost. We will consider various characteristics of women including demographics, health behaviours and mental / physical health as well as health services used during the perinatal period. We will also analyse the impact the two care pathways have on perinatal outcomes (including adverse births).

Project: A276	Perinatal mental health: Psychosocial assessment, service utilisation and maternal outcomes.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Marie-Paule Austin - Perinatal and Women's Mental Health, University of New South Wales</li> <li>• Dr Nicole Reilly - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Jeanette Milgrom - School of Behavioural Sciences, The University of Melbourne</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Sheree Harris - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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This primary aim of this study is to evaluate the impact of a primary prevention, early intervention strategy (perinatal mental health assessment) on service utilisation and health outcomes of mothers in Australia, and to examine equity of access to this national population-based initiative. It will provide an evidence-base from which resistance to routine depression screening and psychosocial assessment in the perinatal period can be addressed, with possible benefits for health services, the mother, infant, family and community.

#### **Research outcomes:**

##### *Publications:*

- Disparities in reported psychosocial assessment across public and private maternity settings: A national survey of women in Australia. Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. 2013, *BMC Public Health*, 13; 632.
- Referral for management of emotional health issues during the perinatal period: does mental health assessment make a difference? Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. 2013. *Birth: Issues in Perinatal Care*, 40 (4); 297-306.
- History of pregnancy loss increases the risk of mental health problems in subsequent pregnancies but not in the postpartum. Chojenta C, Harris S, Reilly N, Forder P, Austin M-P & Loxton D. 2014. *PLoS One*, 9 (4); e95038.
- The impact of routine assessment of past or current mental health on help-seeking in the perinatal period. Reilly N, Harris S, Loxton D, Chojenta C, Forder P & Austin M-P. 2014. *Women & Birth*, 27 (4); e20-e27.

##### *Conferences, seminars and workshops:*

- Adverse reproductive events and mental health and parenting outcomes. Chojenta C & Harris S. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.
- Intimate partner abuse and perinatal mental health. Loxton D & Chojenta C. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.

- Disparities in reported psychosocial assessment during pregnancy and the postnatal period: A national survey of women in Australia. Reilly N, Austin M-P, Loxton D, Chojenta C, Forder P & Milgrom J. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.
- Disparities in reported psychosocial assessment across public and private maternity settings. Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *PHAA 42<sup>nd</sup> Annual Conference*, Melbourne, Vic, 16 - 18 September 2013.
- Referral for management of emotional health issues during the perinatal period: Does mental health assessment make a difference? Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *PHAA 42<sup>nd</sup> Annual Conference*, Melbourne, Vic, 16 - 18 September 2013.
- The impact of mental health assessment on help seeking during the perinatal period: A national survey of women in Australia. Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P *Australasian Marce Society Conference*, Melbourne, Vic, 11 - 12 October 2013.
- The issue of honesty during perinatal screening for depression and anxiety. Forder P, Rich J, Harris S, Reilly N, Chojenta C, Austin M-P, Loxton D. *Australasian Marce Society Conference*, Melbourne, Vic, 11 - 12 October 2013.
- Prevention and early intervention for perinatal mental health: An evaluation of outcomes for women who give birth in Australia. Reilly N, Loxton D, Forder P, Harris S, Chojenta C, Milgrom J & Austin M-P. *Health Services Research Association of Australia and New Zealand (HSRAANZ), 9<sup>th</sup> Biennial Health Services and Policy Research Conference*, Melbourne, Vic, 7 - 9 December 2015.
- Prevention and early intervention for perinatal mental health: An evaluation of outcomes for women who give birth in Australia. Reilly N, Loxton D, Forder P, Harris S, Chojenta C, Milgrom J & Austin MP. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: A378	Oestrogen exposure index (OEI) for reproductive aged women and their health related quality of life
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Australian Longitudinal Study on Women's Health</li> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Hsin-Fang (Evelyn) Chung - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Michael Waller, Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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Lifetime exposure to reproductive hormones may protect women against their future risk of a poor health-related quality-of-life (HRQOL) including reproductive, physical and mental health. During their peak reproductive years, many women are exposed to natural oestrogen during pregnancy, and synthetic oestrogen in the form of oral contraception. The aim of this project is to develop an oestrogen exposure index (OEI) for reproductive-aged women (i.e., the 1973-78 cohort), of whom 71% have had at least one pregnancy. Among the reproductive-aged women, associations between their OEI and higher HRQOL will be examined.

Project: A413	Oestrogen exposure index (OEI) for postmenopausal women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Hsin-Fang (Evelyn) Chung - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Shiva Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Lifetime exposure to reproductive hormones may protect post-menopausal women from chronic disease and poor mental health. During their reproductive lives, many women are exposed to natural oestrogen during pregnancy, and synthetic oestrogen in the form of oral contraception. The use of hormone replacement therapy by peri-menopausal women can provide additional exposure to synthetic oestrogen. The aim of this project is to develop an oestrogen exposure index (OEI) for post-menopausal women (i.e., the 1946-51 cohort), of whom 92% have had at least one pregnancy, and examine the relationship between women's OEI and their post-menopausal risk of chronic disease, cognition, and well-being.

Project: A414	InterLACE: International collaboration for a life course approach to reproductive health and chronic disease events
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Professor Debra Anderson - Menzies Health Institute, Griffith University</li> <li>• Dr Nirmala Pandeya - School of Public Health, The University of Queensland</li> <li>• Dr Hsin-Fang (Evelyn) Chung - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Charlotte Seib - School of Nursing and Midwifery, Griffith University</li> <li>• Dongshan Zhu - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Shiva Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

InterLACE provides a unique opportunity to conduct world-leading research in collaboration with key national and international investigators on women's health studies from six nations. We will undertake cross-cohort research by combining data at the individual level from more than 150 000 participants in eleven existing longitudinal studies (including ALSWH) to investigate the role of reproductive health across life on subsequent CVD events and Type 2 Diabetes Mellitus (T2DM). While this poses cross-cohort and cross-cultural research challenges, InterLACE has the capability to address research questions and generate robust evidence that is not possible from any single cohort study.

**Research outcomes:**

*Publications:*

- InterLACE: A new International Collaboration for a Life Course Approach to Women's Reproductive Health and Chronic Disease Events. Mishra G, Anderson D, Schoenaker DAM, Adami H-O, Avis NE, Brown D, Bruinsma F, Brunner E, Cade JE, Crawford SL, Dobson AJ, Elliott J, Giles GG, Gold Ebl, Hayashi K, Kuh D, Lee KA, Lee JS, Melby MK, Mizunuma H & Sievert LL. *Maturitas*, 2013; 74 (3): 235-240.
- Socioeconomic position, lifestyle factors and age at natural menopause: A systematic review and meta-analyses of studies across six continents. Schoenaker D, Jackson CA, Rowlands J & Mishra G. *International Journal of Epidemiology*, 2014; 1-21.
- The InterLACE study: Design, data harmonization and characteristics across 20 studies on women's health. Mishra G, Chung H, Pandeya N, Dobson A, Jones L, Avis NE, Crawford SL,

Gold EB, Brown D, Sievert LL, Brunner E, Cade J, Burley VJ, Greenwood DC, Giles GG, Bruinsma F, Goodman A, Hayashi K, Lee JS, Mizunuma H, Kuh D, Cooper R, Hardy R, Obermeyer CM, Lee KA, Simonsen MK, Yoshizawa T, Woods NF, Mitchell ES, Hamer M, Demakakos P, Sandin S, Adami H-O, Weiderpas E & Anderson D. *Maturitas*, 2016; 92: 176-185.

- Early menarche, nulliparity, and the risk for premature and early natural menopause. Mishra GD, Pandeya N, Dobson AJ, Chung HF, Anderson D, Kuh D, Sandin S, Giles GG, Bruinsma F, Hayashi K, Lee JS, Mizunuma H, Cade JE, Burley V, Greenwood DC, Goodman A, Simonsen MK, Adami HO, Demakakos P & Weiderpass E. *Human Reproduction*, 2017; 32 (3): 679–686.
- The role of sleep difficulties in vasomotor menopausal symptoms and depressed mood relationships: An international pooled analysis of eight studies in the InterLACE consortium. Chung HF, Pandeya N, Dobson AJ, Kuh D, Brunner EJ, Crawford SL, Avis NE, Gold EB, Mitchell ES, Woods NF, Bromberger JT, Thurston RC, Joffe H, Yoshizawa T, Anderson D & Mishra GD. *Psychological Medicine*, 2018; 12:1-12. doi: 10.1017/S0033291718000168

#### Conference presentations

- InterLACE: An international collaborative study of reproductive health in mid life. Mishra G. *ICOWHI 19th International Congress on "Women's Health 2012: Partnering for a Brighter Global Future"*, Bangkok, Thailand, 14-16 November 2012.
- Inter LACE: International collaboration on Life course approach to reproductive health and Chronic disease Events. Mishra G. *The Fifth Scientific Meeting of the Asia Pacific Menopause Federation*, Tokyo, Japan, 18 - 20 October 2013.
- Reproductive health across the life course and chronic disease events: Results from over 230 000 women across 10 countries. Mishra G. *RCOG World Congress 2015*, Brisbane, Qld, 12-15 April 2015.
- Cross-cultural perspectives on menopause: Findings from the InterLACE collaboration. Mishra G. *UN Commission for the Status of Women*, New York, USA, 17 March 2015.
- Overview of InterLACE: International Collaboration for a Life Course Approach to Women's Reproductive Health and Chronic Disease Events. Mishra GD, Chung HF, Pandeya N & Anderson D. *International Council on Women's Health Issues (ICOWHI) Congress*, Baltimore, Maryland, USA, 6 - 9 November 2016.
- Obesity and vasomotor symptoms during menopause: Results from a pooled analysis. Anderson D, Chung HF, Seib C & Mishra GD. *International Council on Women's Health Issues (ICOWHI) Congress*, Baltimore, Maryland, USA, 6 - 9 November 2016.
- Vasomotor symptoms and psychological symptoms of depression during menopause: Results from a pooled analysis. Chung HF, Pandeya N, Anderson D & Mishra GD. *International Council on Women's Health Issues (ICOWHI) Congress*, Baltimore, Maryland, USA, 6 - 9 November 2016.

- Vasomotor symptoms and psychological symptoms of depression during menopause: Results from a pooled analysis. Chung HF, Pandeya N & Mishra GD. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- Expanding women's and adolescents' health: Integrating noncommunicable diseases through a lifecourse approach. Mishra G (panellist). *The 61<sup>st</sup> Commission on the Status of Women. United Nations*, New York, USA, 21 March 2017.
- InterLACE: International collaboration for a life course approach to reproductive health and chronic disease events. Mishra G. *Nightingale Initiatives for Global Health Symposium*, New York, USA, 17 March 2017.
- Cigarette smoking and risk of premature and early menopause. Chung HF. *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2017*, Sydney, NSW, 28 - 30 September 2017.

Project: A475A	The role of socio-demographic factors in explaining the heterogeneity in the timing of first and subsequent childbirths.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Australian Longitudinal Study on Women's Health</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Jose Romeo - Department of Statistics, University of Auckland</li> <li>• A/Prof Renate Meyer - Department of Statistics, The University of Auckland</li> <li>• Dr Akilew Adane - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Silong Liao - University of Auckland</li> </ul>

This project aims to explore the relationship between a) socio-demographic factors (education level, employment status, income, marital status/living arrangements, area of residence, and age) and the timing of first and subsequent childbirths; b) how these relationships are modified by sexually transmitted infections (STIs), health behaviours (smoking, alcohol and illicit drug use, BMI), and the experience of previous problems with childbirths. This project will use a sophisticated repeated time-to-event model for recurrent events and will focus on women who have given birth during the study period (survey 1-survey 6).

## Research outcomes

### Publications

- Pre-pregnancy weight change and incidence of gestational diabetes mellitus: A finding from a prospective cohort study. Adane A, Tooth L & Mishra G. *Diabetes Research and Clinical Practice*, 2017; 124: 72-80.
- Adult pre-pregnancy weight change and risk of developing hypertensive disorders in pregnancy. Adane A, Mishra G & Tooth L. *Paediatric and Perinatal Epidemiology*, 2017; 31 (3): 167-175.

Project: A609A	The impact of poor mental health on health care costs in the perinatal period.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Clare Collins - School of Health Sciences (Nutrition and Dietetics), The University of Newcastle</li> <li>• Prof Michael Martin - School of Finance, Australian National University</li> <li>• Dr Jananie William - School of Finance, Australian National University</li> <li>• Dr Melinda Hutchesson - The University of Newcastle</li> <li>• Dr Megan Rollo - The University of Newcastle</li> <li>• Zoe Szewczyk - The University of Newcastle</li> </ul>

This project will examine the health care costs for women in the perinatal period, and in particular examine whether a history of poor mental health increases these costs. The project will link data from a range of sources including Perinatal Data Collection, Admitted Patient Data Collection, Medicare Benefits Scheme, Pharmaceutical Benefits Scheme along with self-reported survey data. Both public and private health care systems will be examined.

### Research outcomes:

- The impact of poor mental health on health care costs in the perinatal period. Chojenta C. *International Marce Society Conference*, Melbourne, Vic, 27-29 September 2016.

Project: A515	Is preconception perceived stress a risk factor for low birth weight?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li> </ul>

This study examines the relationship between preconception levels of perceived stress and low birth weight for first time mothers using population-based data. Low birth weight puts an infant at risk of adverse outcomes including neonatal death, growth retardation and behavioural problems. While a number of modifiable risk factors for low birth weight have been identified (including smoking and poor nutrition), recent evidence suggests that stress may play a role in poor obstetric outcomes. Perceived stress experienced during pregnancy has been associated with very low birth weight; however little is known about the impact of perceived stress levels experienced prior to pregnancy on low birth weight. The findings will inform the development of future intervention and prevention strategies.

Project: A522	Are antenatal depression and anxiety risk factors for low birth weight?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li> <li>• Prof Michael Hendryx - School of Public Health, University of Indiana</li> </ul>
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This project will examine the relationship between antenatal depression and antenatal anxiety and low birth weight for first time mothers. Low birth weight puts the infant at risk for adverse outcomes such as neonatal death, growth retardation and behavioural and developmental problems. While a number of modifiable risk factors for low birth weight have been identified (such as poor health behaviours), recent evidence suggests that poor mental health may play a role in poor obstetric outcomes. This project will examine the relationship between antenatal mental health and low birth weight, accounting for a range of other known risk factors.

Project: A639	Characteristics of young women with pregnancy intentions and aspirations for future children before and during pregnancy.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Helena Teede - Monash Centre for Health Research and Implementation, Monash University</li> <li>• A/Prof Lisa Moran - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Briony Hill - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Prof Helen Skouteris - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Mathew Ling - School of Psychology, Deakin University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Lauren Bruce - Monash Centre for Health Research and Implementation, Monash University</li> </ul>
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Comprehensive explorations of the characteristics of preconception women have not been conducted in Australian cohorts. This study aims to describe a range of factors that are associated with women's pregnancy intentions and desire to have children in the future using the Young (1973-78) ALSWH cohort. Specifically, we will investigate demographics, body mass index, psychosocial factors, lifestyle behaviours, and comorbidities of poor lifestyle behaviours (specifically polycystic ovary syndrome) among women intending to get pregnant or who desire to have children in the future.

Project: A622	Prediction of major pregnancy complications.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Danielle Schoenaker - Cancer Council Victoria</li> <li>• Dr Sabita Soedamah-Muthu - Department of Medical and Clinical Psychology, Tilburg University</li> <li>• Prof Leonie Callaway - School of Medicine, The University of Queensland</li> <li>• Dr Yvonne Vergouwe - Erasmus Medical Center</li> </ul>

Gestational diabetes and hypertensive disorders of pregnancy are the two most common medical complications encountered during pregnancy, and are associated with increased risk of adverse health outcomes during and after pregnancy for mothers and their children. Early identification of women who are at a high risk of developing gestational diabetes or hypertensive disorders of pregnancy may enable early implementation of preventive strategies, and facilitate close monitoring to allow for timely screening and management. This project aims to develop a risk prediction score based on multiple maternal characteristics to determine the extent to which pregnancy complications can be predicted based on major risk factors before pregnancy.

Project: A668	Complementary medicine and IVF: Longitudinal analysis of usage patterns and associations with stress, and pregnancy success
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Jon Wardle - Faculty of Health, University Technology Sydney</li> <li>• Dr Romy Lauche - Australian Research Centre in Complementary and Integrative Medicine, University Technology Sydney</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Sean Walsh - School of Life Sciences, University Technology Sydney</li> <li>• Dr Bertrand Yew Kian Loyeung - School of Life Sciences, University Technology Sydney</li> </ul>
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Complementary and Alternative Medicine (CAM) use among couples seeking fertility care is on the rise, and 29% of the couples seeking fertility care had utilised one or more CAM modalities for the treatment of infertility; with acupuncture and herbal therapies being two of the most prevalent. CAM therapies are often thought to support fertility treatment; as such the use of CAM might be associated with better pregnancy outcomes in women undergoing IVF. However, despite high prevalence of CAM use during IVF (and a high number of assumptions underpinning reasons for such use) to date there has no formal or systematic examination of factors associated with CAM use in IVF, or the interface between CAM use, IVF and other pregnancy-related factors such as stress.

Project: A672	Life course approach to preconception health
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Australian Longitudinal Study on Women's Health</li> <li>• Richard Hockey - Women's Health Australia, University of Queensland</li> <li>• Dr Danielle Schoenaker – Cancer Council Victoria</li> </ul>

Improving lifestyle and health before pregnancy may provide an opportunity to help prevent complications during pregnancy. Previous projects in the ALSWH have shown that an unhealthy diet and weight gain in the years leading up to pregnancy were associated with a higher risk of developing gestational diabetes and hypertension. By taking a life course approach to prepregnancy lifestyle and health, this project aims to describe the prevalence of prepregnancy lifestyle and health-related factors, and to examine whether these factors - and their timing and duration - are associated with adverse outcome in future pregnancies. These findings in Australian women form part of a larger project, and will be compared with prepregnancy lifestyle and health-related factors in study populations from the UK.

**Research outcomes:**

*Publications:*

- Stephenson J, Heslehurst N, Hall J, Schoenaker DAJM, Hutchinson J, Cade JE, Poston L, Barrett G, Crozier SR, Barker M, Kumaran K, Yajnik CS, Baird J & Mishra GD. Before the beginning: Nutrition and lifestyle in the preconception period and its importance for future health. *The Lancet*, 2018; 391(10132): 1830-1841.

- Better health and diet well before conception results in healthier pregnancies. Mishra G & Stephenson J. *The Conversation*, April 18, 2018. <https://theconversation.com/better-health-and-diet-well-before-conception-results-in-healthier-pregnancies-94400>

Project: A690	The direct and indirect costs associated with endometriosis in Australia
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Australian Longitudinal Study on Women's Health</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Richard Hockey - Women's Health Australia, University of Queensland</li> <li>• Dr Lisa Hall - Australian Centre for Health Services Innovation, Queensland University of Technology</li> <li>• Dr Judith Reddrop - Women's Wellbeing</li> <li>• Prof Grant Montgomery - Institute for Molecular Biosciences, The University of Queensland</li> <li>• The University of Queensland</li> <li>• Institute for Molecular Bioscience, The University of Queensland</li> <li>• Karolina Olsarova - The University of Queensland</li> </ul>

This study aims to match women's self-reported doctor diagnosis of endometriosis with Commonwealth Medical Benefits Schedule (GP, Specialist visits) and state-based Admitted Patients Collections to provide evidence on the direct economic impacts of endometriosis in Australia from 1996 to 2016. It will also examine lost/reduced work productivity of women with endometriosis in terms of hours in paid work and unemployment (indirect economic impacts).

Project: A696	Unintended pregnancy and contraceptive use in women with chronic disease: providing an evidence-base for Australia
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Deborah Bateson - Family Planning NSW</li> <li>• Prof Jayne Lucke - Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>
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Unintended pregnancy remains high in developed countries despite access to high quality sexual and reproductive services. Some evidence exists that women with chronic diseases experience unintended pregnancy at significantly higher rates than women without chronic disease. For these women, unintended pregnancies are associated with serious adverse maternal and perinatal outcomes, including congenital abnormalities, pre-term labour, spontaneous abortion, and foetal death. Optimised preconception care and reproductive life planning is critical to the prevention of unintended pregnancies and reduction in pregnancy-related complications in women with chronic diseases. Little information exists in the Australian context. This projects aims to fill this knowledge gap.

Project: A706	Impact of a PCOS diagnosis on health-related behaviour, lifestyle choices and psychosocial wellbeing.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Tessa Copp – School of Public Health, The University of Sydney</li> <li>• Dr Jesse Jansen – School of Public Health, The University of Sydney</li> <li>• Dr Jolyn Hersch – The University of Sydney</li> <li>• Prof Kirsten McCaffery – School of Public Health, The University of Sydney</li> <li>• Prof Jenny Doust – Centre for Research in Evidence Based Practice, Bond University</li> <li>• Dr Kevin McGeechan – School of Public Health, The University of Sydney</li> <li>• Prof Gita Mishar – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age and is associated with adverse reproductive, metabolic, cardiovascular and psychosocial outcomes. Using data from the 1989-95 cohort, this project focuses on women who report a new diagnosis of PCOS (i.e., not reported in Survey 1 but in subsequent surveys) and examines whether the diagnosis is associated with changes in BMI, lifestyle (physical activity, diet, smoking, alcohol use, contraceptive use) and psychosocial wellbeing (self-harm, disordered eating, distress). These women will be compared to women without PCOS, and women who initially report a diagnosis of PCOS but do not re-report.

### 11.1.7 Methodology

Project: A058A	Use of ALSWH data to develop and illustrate methodology for analysing longitudinal data
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Mark Jones -Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Alison Griffin - School of Public Health, The University of Queensland</li> </ul>

This application is to use ALSWH data to develop and illustrate methodological issues. The data will be used for methodology research and teaching. We do not anticipate that the data would be used to investigate substantive issues. If any of the work were to develop into manuscripts for submission to journals it would be submitted for review by the Data Access Committee in the usual manner.

Project: A058B	Use of postal or online surveys by Australian women: A longitudinal study of users, devices and cohort retention.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland.</li> <li>• David Fitzgerald - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Mark Jones - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

To reduce costs and improve data quality, participants in the Australian Longitudinal Study on Women's Health, who had responded to regular surveys since 1996, were offered a choice of completing surveys using mailed questionnaires or web-based electronic questionnaires, starting in 2012. This project examines women's mode of survey completion in successive surveys: Surveys 6 and 7 for women in the 2-1973-78 cohort and Surveys 7 and 8 for women in the 1946-51 cohort. Additionally, the socio-

demographic characteristics, health behaviours and health of women who use postal and online modes of completion will be compared.

Project: A573	Attrition in the 1989-95 cohort
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Anna Graves - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Natalie Townsend - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project will describe and evaluate the extent of attrition and reasons for attrition in the 1989-93 cohort. It will examine factors that are related to attrition including the method of recruitment of young women, demographic characteristics, lifestyle factors and self-rated physical and mental health.

Project: A678	Retention of participants over 21 years for three age cohorts.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Effective participant retention is a challenge for longitudinal cohort studies. Over the past 21 years ALSWH has retained participants in three cohorts who were aged 18-23, 45-50 and 70-75 when the

study first collected data in 1996. Women leave the study for a variety of reasons and these differ by cohort. This project examines the predictors of attrition and retention across the original three ALSWH cohorts and examines the effectiveness of various retention methods.

### 11.1.8 Tobacco, alcohol and other drugs

Project: A493B	How does clustering of risk factors relate to indicators of well-being and mental health?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement Studies and Nutrition Sciences, The University of Queensland</li> <li>• Jenny Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Gregore Mielke - School of Human Movement Studies and Nutrition Sciences, The University of Queensland</li> </ul>

The first paper (led by Jenny Powers) has been published – and Gregore Mielke is working on the second one.

#### 2017 research outcomes:

- Powers J, Dobson A, Anderson A, Loxton D, Hockey R, Mishra GD, Brown WJ. Changes in smoking, drinking, overweight and physical inactivity in young Australian women from 1996 to 2013. *Health Promotion Journal of Australia*, accepted 12<sup>th</sup> Jan 2017. Published on-line Feb 2017. <http://dx.doi.org/10.1071/HE16085>

Project: A681	The relative health cost of marijuana use in New South Wales, Australia after at least 12 years of initial usage.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Carl Holder - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This project will attempt to determine if, and quantify how, extended usage of marijuana impacts healthcare costs when compared to the costs of non users, after adjusting for the variables known to affect healthcare costs.

Project: A705	Patterns of alcohol consumption over time and their relationship to mortality and breast cancer risk
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Allison Hodge - Cancer Epidemiology Centre, Cancer Council Victoria</li> <li>• Ms Yi Yang - The University of Melbourne</li> <li>• Prof Dallas English - The University of Melbourne</li> <li>• Dr Brigid Lynch - Cancer Council Victoria</li> <li>• Dr Pierre-Antoine Dugue - Cancer Council Victoria</li> <li>• Dr Harindra Jayasekara - Cancer Council Victoria</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Alcohol consumption is an important modifiable risk factor of mortality and breast cancer risk. How alcohol consumption over time affects mortality and risk of breast cancer remains unclear. Our aims are to study the risk of death and incidence of breast cancer in relation to changes in pattern of consumption over time. This will offer a better understanding of how different long- term drinking profiles from mid- life onwards are related to subsequent risk of mortality and breast cancer risk.

Project: A729	Prevalence and predictors of alcohol risk behaviours
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dominic Cavenagh - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

To get a more accurate understanding of the health risks associated with alcohol consumption amongst the ALSWH's 1989-95 cohort, a set of questions examining the risk behaviours that occurred because of alcohol consumption were devised and used in the 2015 survey of this cohort. The questions asked about the frequency of pre-drinking, vomiting, forgetting things, self-injury and seeking medical attention

because of drinking. This project will examine the following; the prevalence and predictors of these alcohol risk behaviours; how these behaviours relate to self-reported alcohol intake and binge drinking frequency; the role of pre-drinking in alcohol related risk behaviours and injury; and how alcohol risk behaviours relate to changes in alcohol consumption patterns as women move from their teens to their 20's.

### 11.1.9 Weight, nutrition and physical activity

Project: A038A	Relationship between body mass index, diet quality, physical activity and health service utilisation
Collaborative Investigators:	<ul style="list-style-type: none"><li>• Dr Amanda Patterson - School of Health Sciences (Nutrition), The University of Newcastle</li><li>• Prof Clare Collins - School of Health Sciences (Nutrition and Dietetics), The University of Newcastle</li><li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li><li>• Dr Tracy Burrows - School of Health Sciences, University of Newcastle</li><li>• Prof Deborah Loxton Research Centre for Generational Health and Ageing, The University of Newcastle</li></ul>

This project is about evaluating whether healthy eating is associated with reduced health care costs. Updated findings from this project support the need to prioritise an improved diet quality with the aim of reducing healthcare claims and overall costs in a population- based sample of Australian females. As the burden of overweight and obesity on the healthcare system increases, strategies to improve diet quality may be of particular importance; however, more research is required to further establish this relationship.

#### Research outcomes:

##### *Publications:*

- Relationship between body mass index, diet quality, physical activity and health service utilisation. Collins C, Young A & Hodge A. *Journal of the American College of Nutrition*, 2008, 27 (1) 146-157.
- Associations between diet quality, quality of life and Medicare costs in mid-aged women from the Australian Longitudinal Study on Women's Health. Collins C, Young A & Hodge A. *Asia Pacific Journal of Clinical Nutrition*, 2006, 15 (Suppl 3) 5.
- Higher diet quality does not predict lower medicare costs but does predict number of claims in mid-aged Australian women. Collins C, Patterson A & Fitzgerald D, *Nutrients*, 2011, 3 40-48.
- Diet quality and 10-year healthcare costs by BMI categories in the mid-age cohort of the Australian Longitudinal Study on Women's Health. Patterson A, Hure A, Burrows T, Jackson J, Collins C. *Journal of Human Nutrition and Dietetics*, (2018); DOI [10.1111/jhn.12556](https://doi.org/10.1111/jhn.12556)

##### *Conferences, seminars and workshops:*

- Are you what you eat? Associations between diet quality and health utilisation in mid-aged women from the Australian Longitudinal Study on Women's Health. Collins C, Hodge A &

Young A. *Dieticians Association of Australia 23<sup>rd</sup> National Conference*, Perth, WA, 25 - 29 May 2005.

- Change in diet quality in relation to weight change in mid-age Australian women. Collins C. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- Diet quality and 10 years of healthcare costs by BMI categories: Data from the Australian Longitudinal Study on Women's Health. *2018 Dietitians Association of Australia Conference*, Sydney.

Project: A343	Social support and physical activity in older Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Professor Nancy Pachana - School of Psychology, The University of Queensland</li> <li>• Dr Nicola Burton - School of Applied Psychology, Griffith University</li> <li>• Dr Kristiann (Kristi) Heesch - School of Public Health, Queensland University of Technology</li> <li>• A/Prof Jannique Van Uffelen - Department of Kinesiology, University of Leuven</li> <li>• Yolanda Van Gellecum - Institute for Social Science Research, The University of Queensland</li> </ul>

The aim of this analysis is to examine if there are longitudinal associations between social support and physical activity in older women. We will also explore the direction of a potential longitudinal relationship between social support and PA, as the association could be bidirectional.

**Research outcomes:**

- van Uffelen J, Heesch K, van Gellecum Y, Burton N & Brown W. Social interaction and physical activity in women in their seventies. *45<sup>th</sup> Australian Association of Gerontology National Conference*, Brisbane, Qld, 20-23 November 2012.

Project: A397	Differential contribution of fruit and vegetable intake to general health in the ALSWH
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Seema Miharshahi - School of Public Health, The University of Sydney</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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The broad objective of this project is to evaluate the differential effects of fruit and vegetables on health status. So far we have done analysis on the contribution of fruit and vegetable intake to development of depression and Type 2 diabetes in mid age women. Future plans include analysis of association with other NCD's and using data from the young cohort.

Project: A441	Exploration of dietary/nutritional predictors associated with bone health.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Amanda Patterson - School of Health Sciences (Nutrition), The University of Newcastle</li> <li>• Dr Lesley MacDonald-Wicks - Nutrition &amp; Dietetics, The University of Newcastle</li> <li>• A/Prof Mark McEvoy - Centre for Clinical Epidemiology &amp; Biostatistics, The University of Newcastle</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Osteoporosis affects a large number of Australians and without preventative intervention prevalence is expected to significantly increase as the population ages. Epidemiological studies have provided strong evidence of the modifiable risk factors associated with osteoporosis. Calcium and vitamin D intake throughout life appears to be a strong predictor of bone health. Other dietary/nutritional factors associated with bone health include vitamins A, C and K, phosphorus, potassium, zinc, magnesium, sodium, protein, and core food groups such as fruits and vegetables. Australian research in this area however appears to be lacking. This project aims to improve understanding of dietary/nutritional predictors of bone health and to determine the relationship between nutritional status and bone health.

Project: A466	Sitting time and chronic conditions in mid-aged women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Toby Pavey - School of Exercise and Nutrition Sciences, Queensland University of Technology</li> <li>• Dr Bronwyn Clark - School of Human Movement Studies, The University of Queensland</li> </ul>

Sitting-time is emerging as a modifiable risk factor for mortality and chronic disease. In particular, there is limited research on the association between sitting-time and diabetes in mid-aged women, while assessing the effect of physical activity. The aim of this study is to assess the longitudinal association between sitting-time and diabetes in mid-aged women, and assess the role physical activity plays in the association.

**Research outcomes:**

- Pavey TG & Brown WJ. Sitting time and diabetes in mid-aged women over 12-years: the effect of physical activity. *6<sup>th</sup> International Conference on Physical Activity and Public Health (ICPAPH)*, Bangkok, Thailand, 16-19 November 2016.

Project: A425A	Longitudinal changes in maternal diet
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Clare Collins - School of Health Sciences (Nutrition and Dietetics), The University of Newcastle</li> <li>• A/Prof Allison Hodge - Cancer Epidemiology Centre, Cancer Council Victoria</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> <li>• Dr Christopher Oldmeadow - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, Hunter Medical Research Institute</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project seeks to evaluate dietary changes that occur longitudinally in women. The project uses self-reported dietary data from ALSWH's 1973 - 78 cohort, over two mailed surveys in 2003 and 2009. Women will be classified as preconception, pregnant or not pregnant at each time point and their diets compared to observe the changes that occur as a woman ages or becomes pregnant. Overall, this project will examine the trends in dietary intake during childbearing years.

**Research outcomes:**

- The longitudinal association between diet and pregnancy status among Australian women of reproductive age. Gresham E. *10<sup>th</sup> Asia Pacific Conference on Clinical Nutrition*, Adelaide, SA, 26-29 November 2017.

Project: A505A	Dietary iron and haem iron intakes among women of reproductive age from the Australian Longitudinal Study on Women's Health
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Iron is an essential transitional metal and micronutrient; however, deficient and excess levels are associated with adverse outcomes. During pregnancy iron deficiency is associated with preterm birth and low birth weight and elevated iron stores with increased risk of gestational diabetes and preeclampsia. This record-linkage study uses a longitudinal survey to assess low and high levels of dietary iron and haem iron intakes and risk of adverse pregnancy and birth outcomes. We will examine dietary intakes from the 1973-78 ALSWH cohort in 2003 and 2009 and obstetric data from the ALSWH surveys and linked Perinatal Data Collection and Admitted Patients Data Collection in NSW, QLD, WA and ACT.

Project: A521A	Dietary intake of women with disordered eating compared to those without disordered eating
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Clare Collins - School of Health Sciences (Nutrition and Dietetics), The University of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Michelle Blumfield - Faculty of Medicine, Nursing &amp; Health Sciences, Monash University</li> <li>• Dr Leanne Brown - The University of Newcastle</li> <li>• Deanne Harris - Hunter New England Health</li> <li>• Dr Miriam Grotowski - Department of Rural Health, The University of Newcastle</li> <li>• Jia Yin Ooi - The University of Newcastle</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This study will investigate the dietary intakes of women with disordered eating from the 1973-78 cohort of the ALSWH. A cross-sectional analysis of food frequency data from the 1973-78 cohort at survey 3 in 2003 will compare dietary intakes for those with and without disordered eating. Macro and micronutrient intakes will be compared to the Nutrient Reference Values for Australia and New Zealand. This study will also determine if there are differences in dietary intakes in urban compared to non-urban women with disordered eating.

Project: A525	Causal inference of smoking, nutrition, alcohol and physical activity on birth weight: a sibling analysis.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Ms Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Mrs Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> <li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li> </ul>

Residual confounding is a major problem in observational studies, meaning that results must be interpreted with caution. Data from siblings provides the opportunity to better control for family characteristics, thereby reducing residual confounding and increasing causal inference. Sibling analysis allows for a separation of within-family effects from between-family effects and simultaneous estimation of both. We will apply sibling analysis to birth weight data from the state-based Perinatal Data Collections linked to the 1973-1978 ALSWH cohort. We intend to focus on the role of four key modifiable lifestyle factors: smoking; nutrition (diet and weight); alcohol; and physical activity, on birth weight.

Project: A601	Trajectories of sitting time in young and mid-age women and associations with depression, physical function and health care costs
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Ingrid Rowlands – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Bronwyn Clark - School of Human Movement Studies, The University of Queensland</li> <li>• Dr Paul Gardiner – Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• A/Prof Dori Rosenberg – Group Health Research Institute, Seattle</li> <li>• Dr Calum Leask – National Health Service, UK</li> </ul>
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Changes in the way we live our lives means that people are sitting for longer than previously, however little is known about how women’s sitting time changes (or remains stable) over time. Prolonged sitting is an emerging public health issue: strong evidence links this behaviour to poorer health, e.g. cardiovascular disease, and also to a higher risk of premature mortality. While studies have shown that time spent watching television (a common activity involving prolonged sitting) is linked to depression and poorer physical function, there is less evidence on the impacts of sitting time across the day on these health outcomes.

**Research outcomes:**

- 15 year trajectories of sitting times are associated with depressive symptoms in young women. Gardiner P. *15<sup>th</sup> World Congress on Public Health*, Melbourne, Vic, 3-7 April 2017.

Project: A641A	Dietary inorganic nitrite/nitrite intake in a representative sample of Australian Women, and cardiovascular disease risk.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Amanda Patterson - School of Health Sciences (Nutrition), The University of Newcastle</li> <li>• Dr Lesley MacDonald-Wicks - Nutrition &amp; Dietetics, The University of Newcastle</li> <li>• A/Prof Mark McEvoy - Centre for Clinical Epidemiology &amp; Biostatistics, The University of Newcastle</li> <li>• Jacklyn Jackson - School of Health Sciences, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Catherine Bondonno - School of Medical and Health Sciences, Edith Cowan University.</li> <li>• Lauren Blekkenhorst - School of Medical and Health Sciences, Edith Cowan University.</li> <li>• Prof Johnathan Hodgson - School of Medical and Health Sciences, Edith Cowan University</li> <li>• Dr Natalie Ward - School of Public Health and Curtin Health Innovation Research Institute, Curtin University.</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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Nitric Oxide (NO) is an important signalling molecule in the cardiovascular system and is vital for vascular function. Further, conditions of NO deficiency due to aging, diabetes and smoking are associated with the development of hypertension and atherosclerosis.

Vegetables (especially beetroot and leafy greens) provide the richest dietary source of inorganic nitrate. Dietary nitrate can be utilized via the Nitrate-Nitrite-NO pathway to produce NO, indicating a relatively simple and cost effective method for restoring NO status.

**Research outcomes:**

- Dietary nitrate and diet quality: An examination of changing dietary intakes within a representative sample of Australian women. Presented at *DAA conference*, Sydney May 2018.

Project: A648	Long term impact of total hip and knee replacement on physical activity and sedentary behaviour in middle-aged women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Prof Stephen Graves - Flinders Clinical and Molecular Medicine, Flinders University</li> <li>• Prof Belinda Gabbe - School of Public Health and Preventative Medicine, Monash University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Rachel Climie - Baker IDI</li> <li>• Pam Simpson - School of Public Health and Preventative Medicine, Monash University</li> <li>• Dr Christina Ekegren - School of Public Health and Preventative Medicine, Monash University</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>
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Joint replacement is known to improve pain and function for individuals with arthritis and joint fractures. While there has been extensive research on patients' function and mobility following hip and knee joint replacement, it is important to also investigate whether improvements in function actually translate to increased activity. With physical inactivity being a risk factor for chronic diseases such as type 2 diabetes and heart disease,<sup>1</sup> understanding the impact of joint replacement on activity levels is vital for understanding the associated long-term health implications.

**Research outcomes:**

- Cohort Profile: The burden of cancer attributable to modifiable risk factors – the Australian Cancer-PAF Cohort Consortium. Arriaga ME, Vajdic CM, Canfell K, MacInnis R, Hull P, Magliano DJ, Banks E, Giles GG, Cumming RG, Byles JE, Taylor AW, Shaw JE, Price K, Hirani V, Mitchell P, Adelstein B-A & Laaksonen MA. *BMJ Open*, 2017, 7 (6) e016178.

Project: A655	Association between insomnia and total energy intake and diet quality
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Elizabeth Stojanovski - School of Mathematical &amp; Physical Sciences, University of Newcastle</li> <li>• A/Prof Mark McEvoy - Centre for Clinical Epidemiology &amp; Biostatistics, The University of Newcastle</li> <li>• Dr Amani Hamad Alhazmi - King Khalid University</li> <li>• Dr Jency Thomas – La Trobe University</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

In this project the quantitative survey data will be interrogated to examine whether women (1946-51 cohort) with insomnia symptoms had greater energy intake and/or a lower diet quality as assessed with the use of diet quality score.

Project: A689	Supplement intake for women of reproductive age (preconception or pregnant) from the Australian Longitudinal Study on Women's Health.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> <li>• Dr Christopher Oldmeadow - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, Hunter Medical Research Institute</li> <li>• Prof Anthony Perkins - Griffith University</li> <li>• Elle McKenna - Griffith University</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

During pregnancy, there is an increased requirement for specific micronutrients to support foetal growth and development as well as maternal metabolism. Suboptimal nutrition during this time, may lead to impaired foetal growth and an increased risk of adverse outcomes. The proposed project seeks to evaluate and explore the trends in nutrient supplement intake in women of reproductive age, across their childbearing years and assess the benefits and harms on pregnancy and birth outcomes. The project will use self-reported medication data from the 1973-78 ALSWH cohort, reported over three surveys in 2009 (Survey 5), 2012 (Survey 6) and 2015 (Survey 7). Women will be classified as preconception, pregnant or not pregnant at each time point.

#### Research outcomes:

##### *Publications:*

- Dietary supplement use during preconception: The Australian Longitudinal Study on Women's Health, McKenna E, Perkins A, Hure J, Gresham E. *Nutrients*, 2017, 9(10); E1119.

##### *Presentations, seminars and workshops:*

- Dietary supplement use during preconception and pregnancy: The Australian Longitudinal Study on Women's Health. McKenna E. *10th Asia Pacific Conference on Clinical Nutrition*, Adelaide, SA, 26-29 November 2017.

Project: A698	Dietary intake and type 2 diabetes among women with and without a history of gestational diabetes
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Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Allison Hodge - Cancer Epidemiology Centre, Cancer Council Victoria</li> <li>• Dr Danielle Schoenaker - Cancer Council Victoria</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> <li>• Dr Lynda Ross - School of Allied Health Sciences, Griffith University</li> <li>• Jessica Rayner - Griffith University</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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Women with gestational diabetes receive dietary advice to limit carbohydrate intake during their pregnancy as part of medical nutrition therapy. Evidence on whether any maternal dietary changes are sustained post-pregnancy, and into mid-life is limited. The proposed project seeks to explore the differences in dietary intake among mid-age women with and without a history of gestational diabetes. Specifically this project will examine if a diet low in carbohydrates is negatively or positively associated with the development of impaired glucose tolerance and type 2 diabetes, and if these associations differ according to history of gestational diabetes.

Project: A709	Does diet quality predict Body Mass Index (BMI) and weight gain in women of reproductive age?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Clare Collins - School of Health Sciences (Nutrition and Dietetics), The University of Newcastle</li> <li>• A/Prof Allison Hodge - Cancer Epidemiology Centre, Cancer Council Victoria</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> <li>• Dr Christopher Oldmeadow - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, Hunter Medical Research Institute</li> </ul>

	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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The proposed project seeks to evaluate dietary changes that occur longitudinally in women as a predictor of BMI and weight gain. The project will use self-reported dietary data from ALSWH's young cohort (1973- 78), over two mailed surveys in 2003 and 2009. Women will be classified according to BMI (underweight, healthy, overweight, and obese) at each time point and their diets compared to observe the changes that occur overtime.

Project: A726	Assessing patterns of change in lifestyle behaviours following birth
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Lisa Moran - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Assoc. Prof. Arul Earnest - Department of Epidemiology and Preventive Medicine, Monash University</li> <li>• Sanjeeva Ranasinha - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Prof Helena Teede - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Siew Lim - Monash University</li> <li>• Prof Helen Skouteris - School of Psychology, Deakin University</li> <li>• Dr Jacqueline Boyle - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Dr Briony Hill - Monash University</li> <li>• A/Prof Allison Hodge - Cancer Epidemiology Centre, Cancer Council Victoria</li> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

Up to 1 in 2 Australian women are overweight and obese which can be worsened by excessive weight gain during pregnancy and after childbirth. Postpartum weight retention is common and fewer than 50% of women are estimated to return to their pre-pregnancy weight. Changes in diet and physical activity after childbirth can contribute to parity-related weight gain. However, it is not known if specific groups of women (eg based on factors such as age, health status, education, income, occupation and ethnicity) have particular difficulties in following healthy lifestyle behaviours, that may in turn be associated with greater parity-related weight gain.

Project: A730A	Association between dairy intake and cardiometabolic risk
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Ameer Buziau - Wageningen University</li> <li>• Prof Marianne Geleijnse - Wageningen University</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

The number of people living with type 2 diabetes (T2D) is sharply rising, causing global concern<sup>1</sup>. T2D patients are at high risk of cardiovascular diseases (CVD), which remains the biggest cause of deaths worldwide<sup>2</sup>. In recent years, an increased interest was observed in the potential role of dairy intake in relation to these chronic diseases. However, the magnitude and strength of the association remains uncertain. Therefore, the aim of the present study is to investigate the association between intake of different quantities and types of dairy foods and incident T2D and CVDs in Australian women.

<sup>1</sup>: World Health Organization. *Global Report on Diabetes*. 2016. Available from: [http://apps.who.int/iris/bitstream/10665/204871/1/9789241565257\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/204871/1/9789241565257_eng.pdf?ua=1)

<sup>2</sup>: Mathers CD & Loncar D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Medicine*, 3(11), e442.

### 11.1.10 Social factors in health and well being

Project: A299	Coping with motherhood and work: Predicting positive wellbeing among young Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Christina Lee - School of Psychology, University of Queensland</li> <li>• Dr Melissa Johnstone - Institute of Early Childhood, Macquarie University</li> <li>• Prof Jayne Lucke Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> </ul>

Successfully managing work and family is a major issue for most Australians that impacts strongly on employed women, who continue to also undertake most of the domestic tasks. As one way to balance paid work and family, many Australian women shift to part-time hours or casual employment after having children. This project aims to investigate the work-family trajectories of a new generation of Australian women. We will also investigate who is coping well during this transition, and the extent to which women's different work-family pathways reflect their earlier-stated aspirations.

Project: A519	The impact of motherhood on women's perception of time stress
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Steffen Otterbach - University of Hohenheim</li> </ul>

Perceptions of time pressure are becoming more prevalent across society, and can be associated with poor mental and physical health, reduced life satisfaction, sleep deprivation, and relationship stress and instability. With a decline in the 'traditional' family structure, there is an increasing importance for policies that effect families to account for parental time resources. For this to occur, the policy evidence base

needs to convey a sound understanding of women’s time pressure. This project will identify patterns of time pressure in women of the 1973-78 ALSWH cohort over a 16-year period, and determine the impact of children on women’s time.

**Research outcomes:**

*Publications*

- The effect of motherhood and work on women’s time pressure: A cohort analysis using the Australian Longitudinal Study on Women’s Health. Otterbach S, Tavener M, Forder P, Powers J, Loxton D & Byles J. *Scandinavian Journal of Work, Environment and Health*, 2016, 42 (6) 500-509.

*Conferences, seminars and workshops:*

- Time stress among women in Australia – A cohort analysis using the Australian Longitudinal Study on Women’s Health. Otterbach S, Tavener M, Forder P, Loxton D & Byles J. 37<sup>th</sup> IATUR Conference on Time Use Research, Ankara, Turkey, 5 - 7 August 2015.

Project: A588	Using latent class analysis to identify how mid-aged women manage on income over time.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Mrs Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Jack Noone - Centre for Social Impact, University of New South Wales</li> </ul>

Income can be a major determinant of women’s health and wellbeing. Women’s varied attachment to the labour force when younger, changes to employment to accommodate family, and time of retirement, can result in women experiencing difficulty managing on the income available to them. This work will use latent class analysis techniques to identify different trajectories of how women manage on their available income for the 1946-51 ALSWH birth cohort from 1996 to 2013. Then to describe and evaluate the influence of women’s occupation and social/health circumstances on these trajectories over time.

Project: A643	Profiling women's workforce participation and child care usage
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, University of Newcastle</li> <li>• Dr Mary Welsh - Department of Education and Training</li> <li>• Dr Eliza Ahmed - Department of Education and Training</li> <li>• Mike Power - Department of Education and Training</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, University of Newcastle</li> </ul>

This project will provide insights into women's workforce participation and their use of child care using seven waves of the ALSWH 1973-78 cohort data (including preliminary data for the most recent wave).

Project: A697	Sexual fluidity amongst Australian women over the life course
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Alice Campbell - Institute for Social Science Research, The University of Queensland</li> <li>• Dr Francisco Perales - Institute for Social Science Research, The University of Queensland</li> <li>• Prof Janeen Baxter - Institute for Social Science Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

In the past, it was assumed that a person's sexual orientation stayed the same throughout their life. However, it has recently been documented that a significant number of men and (particularly) women report changes to their sexual orientation over time. The aim of this project is to provide first-time, systematic Australian evidence on how common changes in sexual orientation are, what factors make these more and less likely to occur, their timing and their impact on women's life outcomes.

**Research outcomes:**

- Leveraging large-scale panel data to study sexual orientation: Two case studies. Campbell A, Perales F & Baxter J. *Society for Longitudinal and Life Course Studies Conference*, Milan, 9-11 July 2018.

Project: A727	Health inequalities and social determinants of health amongst young mothers
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Catherine Gatta - The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Often, health cannot be explained in terms of germs and genes alone. Broader social factors influence our health and well-being too, such as the environment in which we live and work, the quality of our social networks, and our access to education, health care and leisure time. Differences in these social determinants of health can lead to poorer health outcomes and health inequalities amongst different sub-groups in the Australian population. This project seeks to investigate the social circumstances and health trajectories of young mothers, participants in the 1989-95 cohort who reported having had a child by Survey 4 (in 2016), compared to young women who have not had children.

Project: A736	Screen time in Australian children: Socioeconomic, maternal, parenting, time use and family environment factors associated with meeting screen time guidelines (Analysis of data from the MatCH study).
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Katrina Moss - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Recently released guidelines from the Australian Government recommends maximum daily screen time for children aged 0 -1, 1-2, 3-5 and 5-12 years. Previous Australian research has linked screen time in children with socioeconomic factors in their parents (for example years of education) as well as with parenting style and home environment, however the majority of this research has investigated this issue in older children, has not linked long standing maternal factors and has not examined associations between and within families. This research aims to determine the associations between children's

screen time and sleep, diet, physical activity, physical and cognitive development, quality of life, behaviour, maternal factors, parenting styles and the home environment.

### 11.1.11 Oral health

Project: A670	Oral Health - findings from the Australian Longitudinal Study of Women's Health
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Ratilal Laloo - School of Dentistry, The University of Queensland</li> <li>• Chris Sexton - School of Dentistry, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Oral health studies are generally cross-sectional and seldom report longitudinal follow-up of study participants. The Australian Longitudinal Study of Women's Health offers an opportunity to measure the oral health across a number of surveys, where the same/similar questions were asked; to assess changes in self-reported oral health status and relationships between surveys and potential determinants of oral health, such as socioeconomic status, private health insurance, location, smoking and menopause.

### 11.1.12 Abuse

Project: A237A	The long term implications of intimate partner violence for health and social support
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Karly Furber - School of Medicine and Public Health, University of Newcastle</li> <li>• Nicole Buchannan - School of Psychology, Charles Sturt University</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Natalie Townsend - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

An increasing volume of literature is building to show that recent intimate partner violence (IPV) is related to poor physical and mental health outcomes for women. This study aims to show that even after a substantial period of time ( $\geq 11$  years) adverse physical and mental health outcomes are still significant for women who have experienced IPV. Previous studies have incorporated data from women ever experiencing abuse (in their adult life) with women experiencing abuse in the last few months. This study aims to isolate those who have experienced abuse 11 years earlier to focus on long term effects only, using the retrospective IPV measure (Q105) that was added to the fifth survey of the 1946-51 cohort.

Project: A495C	Comparison of violence among 18-23 year old women in 1996 and 2012-13
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Ingrid Rowlands - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Kelsey Hegarty - Department of General Practice, Faculty of Medicine</li> <li>• Mrs Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Carl Holder - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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This project will look at the prevalence of violence among women aged 18-23 in 2012-13, compare the proportion of 18-23 year old women who have experienced violence in 1996 with those experiencing violence in 2012-13, and describe the sociodemographic characteristics of those 18-23 year old women in 1996 and 2012-13 who experienced violence.

This project has also examined the consistency in responding to items that ask about domestic violence over time. Current analyses are further exploring the prevalence and correlates of intimate partner violence among women aged 18-23 in 2012-13.

#### Research outcomes

- Domestic violence and health across the life-course: Results from the Australian Longitudinal Study of Women's Health. Loxton D. *2015 Australian STOP Domestic Violence Conference*, Canberra, ACT, 7 - 9 December 2015.
- Violence (Session Chair). Loxton D. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: A551	Chronic pain and behavioural outcomes for Australian women with a history of trauma-pilot study
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Sam Brilleman - Monash University</li> <li>• A/Prof Jan Coles - Department of General Practice, Monash University</li> </ul>

	<ul style="list-style-type: none"> <li>• Alison Flehr - Department of General Practice, Monash University</li> <li>• Prof. Stephen Gibson – Medicine, Royal Melbourne Hospital, The University of Melbourne.</li> <li>• Prof John Dixon - Baker IDI Heart and Diabetes Institute</li> </ul>
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The purpose of this study is to utilize the ‘young’ cohort ALSWH data to comprehensively examine the link between traumatic experience, physical or psychological and the development of chronic pain. This will include further investigation of this link within an expanded ‘trauma experience’ criteria, and the associated health, behavioural and socioeconomic factors. In addition, this study aims to demonstrate the interaction and relationship between behavioural factors and the emergence of chronic pain, across the six ALSWH ‘young’ cohort survey collection points from 1996-2012.

**Research outcomes:**

- A psychobiological model of persistent pain: A mixed-methods investigation into the relationship of traumatic experience with persistent pain, the underlying psychobiological functional mechanisms to persistent pain, and the benefits of mind-body integrative therapies for the treatment of persistent pain. Flehr A. *Monash University Mid-Candidature Review*, Clayton, Vic, 10 May 2016.
- Data orally presented in a free paper session at the *2017 Australian Pain Society 37<sup>th</sup> Annual Scientific Meeting: Expanding Horizons*, Adelaide, 9 – 12 April 2017.

Project: A572	The health and wellbeing of women who have experienced intimate partner violence
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Natalie Townsend - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> </ul>

Women who have lived with a violent partner experience a wide range of physical and psychological health problems. Despite the evidence base that supports the association between intimate partner violence (IPV) and health, there are few studies that have examined changes in health after the onset of IPV. The ALSWH has captured the onset of IPV among women born 1973- 78 since 1996, and since 2006 has measured the type of abuse women have experienced. The current study will examine these data in order to measure changes in health that occur once IPV has been experienced.

**Research outcomes:**

- Violence (Session Chair). Loxton D. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- Intimate Partner Violence and Health. Loxton D. Department of Health, Canberra, ACT, 1 July 2015.

Project: A574A	Finding a life without domestic violence: Analysis of free-text responses from the Australian Longitudinal Study on Women's Health surveys
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Lyn Francis - Western Sydney University</li> <li>• A/Prof Virginia Skinner - School of Nursing and Midwifery, Western Sydney University</li> <li>• Keira Stegeman - Western Sydney University</li> </ul>

This project will ascertain experiences of women who have lived with domestic violence and where applicable, what assisted them in finding a violence free, healthy life.

Qualitative thematic data analysis will comprise of free text responses to the open-ended question, 'Have we missed anything?' included in the ALSWH surveys. Responses that indicate experiences of abuse in relationships and women's decision making regarding staying or leaving abusive relationships will be examined. The researcher will identify if the issue of social support (formal and/or informal) is raised by participants in relation to abuse or violence and what helped or hindered disclosure of abuse and/or help seeking in the context of abuse and leaving or ending such relationships.

Quantitative data collected from the surveys will ensure diversity in the sample and consider whether women identified domestic violence within their relationships.

Project: A607A	Adverse childhood experiences among Australian women.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• A/Prof Jan Coles - Department of General Practice, Monash University</li> </ul>

	<ul style="list-style-type: none"> <li>• Natalie Townsend - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Dominic Cavenagh - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> </ul>
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The Adverse Childhood Experiences (ACE) scale has been widely used in the U.S. population. Findings have indicated that adults who have experienced adversity in childhood have poorer overall health and are more likely to use tobacco, illicit drugs and use alcohol at risky levels. The ACE scale was pilot tested with the 1989-1995 cohort in 2014 and was rolled out to the main 1989-1995 cohort in 2015. This current project will examine the endorsement and validity of the ACE scale among the 1989-1995 cohort participants, with further examination of the prevalence of childhood abuse and trauma and its correlates. The examination of the prevalence of childhood abuse and trauma and its correlates will also be extended to the 1973-78 cohort and 1946-51 cohort.

Project: A495C	Violence and reproductive ageing in mid-life
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Hsin-Fang (Evelyn) Chung - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Physical and psychological effects of violence may negatively impact on women's reproductive lives. Most of the research focuses on the impact of violence on women during their childbearing years. However, violence may have an enduring influence on women, affecting their experience of reproductive ageing (e.g. age of menopause, duration of peri-menopause, menopause status (including hysterectomy +- bilateral oophorectomy and hormone therapy use), vasomotor, somatic and psychosocial symptoms). Using data from the 1946-51 cohort, this study will examine the extent to which violence in mid-aged women is associated with their experience of reproductive ageing in mid-life.

### Research outcomes

#### *Publications:*

- The role of smoking in the relationship between intimate partner violence and age at natural menopause: A mediation analysis. Mishra GD, Chung HF, Gelaw YA & Loxton D. *Women's Midlife Health*, 2018; 4 (1): 1-10.

Conference presentations:

- Intimate partner violence, smoking, and age at natural menopause. Mishra G. *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2017*, Sydney, NSW, 28 - 30 September 2017.

Project: A647	The longitudinal impact of intimate partner violence on Australian women's mental health, employment, health service use and personal interactions
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• A/Prof Reinie Cordier - Faculty of Health Sciences, Curtin University</li> <li>• Dr Yu-Wei Chen - Faculty of Health Sciences, The University of Sydney</li> <li>• Prof Donna Chung - School of Occupational Therapy and Social Work, Curtin University</li> <li>• Prof Deborah Loxton Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project aims to investigate the long-term impact of intimate partner violence on women in the following domains: 1. Women's mental health and wellbeing 2. Women's ability to work 3. Women's utilisation of health services 4. Women's personal/social interactions The dependant variable that will be used for the study is the question about abuse that was asked in waves 2 and 3 in the young cohort and the partner abuse question (community composite abuse scale) waves 4-6 in the young cohort. We also aim to investigate the psychometric properties of the community composite abuse scale using Rasch analysis.

- **Research outcomes:**

The influence of intimate partner violence on young women's ability to work. Cordier R, Chen Y-W, Chung D & Loxton D. *World Federation of Occupational Therapy Congress*, Cape Town, South Africa, 2018.

Project: A717	The impact of historical intimate partner violence on survival and risk for chronic illness in older women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Ms Monica Cations - Flinders University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Kate Laver - Flinders University</li> <li>• Dr Stephanie Harrison - Flinders University</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>
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Intimate partner violence (IPV) negatively affects the physical and mental wellbeing of victims even many years after the abuse has ended. However, it is not known whether IPV at some time in life puts older women at risk for chronic health conditions such as dementia, diabetes, and heart disease, or whether it shortens their lifespan. This analysis will explore the effect of historical IPV on risk for death and serious illness over 15 years in older women.

Project: A746	Risk profiles for domestic violence and the impact of domestic violence on the health and wellbeing of women who come from vulnerable circumstances (i.e. culturally and linguistically diverse backgrounds or report having a disability).
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Natalie Townsend - Research Centre for Gender, Health and Ageing, The University of Newcastle</li> <li>• Dominic Cavenagh - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> <li>• Dr Marian Esler - Family Safety Branch, Department of Social Services</li> <li>• Rose Beynon - Family Service Taskforce, Department of Social Services</li> </ul>

This project will examine the health and wellbeing of women who experience domestic violence and who either come from (a) culturally and linguistically diverse backgrounds or (b) have reported having a disability. In addition, the analyses will investigate factors that may increase vulnerability to domestic violence with the aim of identifying risk profiles. The variables used to indicate abuse and violence will use the data from the consistent question across surveys and cohorts about intimate partner violence (which relates to violent relationships with partners and spouses), as well as the more extensive Community Composite Abuse Scale that has been repeatedly asked in several surveys for the two youngest cohorts of the ALSWH (ie. those women born 1989-95 and 1973-78).

### 11.1.13 Caring

Project: A719	Major Report M
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Leigh Tooth – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Ryan Tuckerman - Research Centre for Gender, Health and Ageing, University of Newcastle</li> <li>• Dominic Cavenagh - Research Centre for Generational Health &amp; Ageing, The University of Newcastle</li> <li>• Jacqueline Coombe - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project will explore the experiences of women providing care and support to others. Specifically, this project will examine the experiences of women who are providing care for their children and other adults simultaneously, the experiences of women who both provide and require care from others, and the experiences of women returning to paid work after having children. This project will use comments provided by ALSWH participants to examine these experiences.

#### 11.1.14 Other

Project: A699	Using geocoded data to assign environmental exposures
Collaborative Investigators:	<ul style="list-style-type: none"><li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• David Fitzgerald - Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• Dr Luke Knibbs - School of Public Health, The University of Queensland</li></ul>

People's exposure to adverse environmental hazards like air pollution and noise is highly dependent on where they live. This is also true for exposures that may be beneficial, like green spaces. This project will use geocoded data from the ALSWH and MatCH studies (i.e. latitude and longitude of each residential address) to develop an exposure database that will then be available to ALSWH researchers to assess the associations between environmental exposures and health outcomes in these cohorts.

## 11.2 Completed research projects

Project: A254A	A life course perspective in the identification of risk factors for adverse birth outcomes
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Ellie Gresham - Health Intelligence Unit, NSW Health</li> </ul>

This project seeks to use a life course perspective to identify risk factors for adverse birth outcomes. The project will capitalise on previous research investment by analysing existing data collected by the Australian Longitudinal Study on Women's Health (ALSWH), linked with the perinatal and admitted patients' datasets, (NSW). The longitudinal data will be used to take a novel approach to a suite of adverse birth outcomes such as: stillbirth, congenital conditions, neonatal death, premature birth and low birth weight to identify short and long term risk factors. This project will also provide an objective measure of the validity of some participant responses, which is important for future research on the reproductive health of women in the young cohort.

### Research outcomes:

#### *Publications:*

- Miscarriage, preterm delivery and stillbirth: Large variations in rates within a cohort of Australian women. Hure A, Powers J, Mishra G, Herbert D, Byles J & Loxton D. *PLoS ONE*, 2012, 7(5); 1-8.
- Validity & reliability of stillbirth data using linked self-reported & administrative datasets. Hure A, Chojenta C, Powers J, Byles J & Loxton D. *Journal of Epidemiology*, 2015, 25 (1); 30-37.

- Agreement between self-reported perinatal outcomes and administrative data in New South Wales, Australia. Gresham E, Forder P, Chojenta C, Byles J, Loxton D & Hure A. *BMC Pregnancy and Childbirth*, 2015, 15;161.

*Conferences, seminars and workshops:*

- An overview of the developmental origins of health and disease: What should dietitians know?  
Hure A. 16<sup>th</sup> International Congress of Dietetics, Sydney, NSW, 5-9 September 2012.

Project: A260	Trends in health related quality of life of women in their 70s and 80s.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Lucy Leigh - Hunter Medical Research Institute</li> <li>• Kha Vo - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Decline in physical function is a common feature of older age. However, decline is not uniform or linear. Among individuals of similar chronological age, some individuals appear to be resistant to decline in function while others appear more vulnerable. This project explores factors associated with survival and maintenance of physical well-being among a large cohort of 12,432 women in the Australian Longitudinal Study on Women’s Health. Across five surveys, there has been a marked decline in physical health scores for the cohort, as measured by Short Form (SF-36) health related quality of life sub-scales. However, while average scores declined, a large proportion of the women experienced minimal change in physical health scores over the 12 years. Using latent profile analysis, we identified four main patterns in the scores among those who survived and stayed in the study at Survey 4: consistently higher scores (61% of women); declining scores (11% of women); consistently low scores (25% of women); increasing scores (3% of women.). Among survivors who remained in the study, factors associated with maintaining high SF-36 scores include fewer clinical diagnoses, healthy weight, and a range of social and behavioural factors.

**Research outcomes:**

*Publications:*

- Change in physical function among women as they age: Findings from the Australian Longitudinal Study on Women's Health. Leigh L, Byles J & Mishra G. *Quality of Life Research*, 2017, 26 (4); 981-991.

Conferences, seminars and workshops:

- Living long and living well: Factors associated with maintenance of physical function among older women (poster presentation). Byles J & Gibson R. *South East Asian Conference on Ageing (SEACA2010)*, Kuala Lumpur, Malaysia, 17 - 18 July 2010.
- Living long and living well: Factors associated with maintenance of physical function among older women. Byles J & Gibson R. *Gerontological Society of America 64<sup>th</sup> Annual Scientific Meeting*, Boston, MA, USA, 18 - 22 November 2012.
- Women's work: A lifecourse approach to women, work and caring. Byles J. *Australian Association of Gerontology and Geriatrics 50<sup>th</sup> Annual Conference*, Perth, WA, 7-10 November 2017.

Project: A303B	Influence of socio-economic position and lifestyle factors on transitions in caring for women born 1946-1951 and 1973-1978
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Informal caring is a significant burden on the people – largely women – who take it on, and there is evidence that carers tend to be disadvantaged economically and in poor physical and emotional health. This project used existing data from ALSWH, collected over 18 years from the 1973-78 and 1946-51 cohorts, to examine the interrelationships between socioeconomic position (SEP) and lifestyle factors and informal caring amongst the ALSWH women. It explored transitions in informal caring, and the extent to which the caring role may moderate the relationships between SEP and physical and emotional wellbeing. It further examined the associations between lifestyle factors and caring trajectories, and the influence of caring trajectories on lifestyle behaviours and health outcomes.

**Research outcomes:**

*Publications:*

- Socioeconomic factors associated with trajectories of caring by young and mid-aged women: a cohort study. Tooth L, Mishra G. (2014). *BMC Public Health*, 4:74.. DOI: 10.1186/10.1186/1471-2458-14-74. <http://www.biomedcentral.com/1471-2458/14/74>
- Characterising longitudinal trajectories of caring by young and mid-aged women. Tooth L & Mishra G. *Australasian Epidemiologist*, 2013, 20 (2), 36. (Published abstract)

*Conferences, seminars and workshops:*

- Characterising longitudinal trajectories of caring by young and mid-aged women. Tooth L & Mishra G. Paper presented at *Australasian Epidemiological Association Conference*, Brisbane, 20-22 October 2013.

Project: A349	Cancer rates and risk factors among lesbian and bisexual women: An overlooked health disparity
Collaborative Investigators	<ul style="list-style-type: none"> <li>• A/Prof Ruth McNair (Dept of General Practice, University of Melbourne)</li> <li>• Prof Tonda Hughes (College of Nursing, University of Illinois)</li> <li>• Prof Laura Szalacha (Center for Research &amp; Transdisciplinary Scholarship, The Ohio State University)</li> <li>• Prof Patricia Livingston (School of Nursing, Deakin University)</li> <li>• Dr Rhonda Brown (School of Nursing and Midwifery, Deakin University)</li> </ul>

This study compared rates of cancer and cancer risk factors among among Australian middle age women of varying sexual identity. In particular it examined the prevalence and incidence of cancer, cancer screenings and related risk factors including physical activity, BMI, smoking, alcohol use and dietary practices. Findings from this study contribute to a better understanding of lesbian and bisexual women's cancer risk status.

**Research outcomes:**

*Publications:*

- Brown R, McNair R, Szalacha L, Livingston P & Hughes T. (2015). Cancer risk factors, diagnosis and sexual identity in the Australian Longitudinal Study of Women's Health. *Women's Health Issues* 25(5); 509-516.

*Conferences, seminars and workshops:*

- Brown R, Livingston P, McNair R & Hughes T. Cancer risks for lesbians and bi-sexual women. *Women's Health Research: Health Risks and Policy Implications. Public Forum*, The University of Melbourne, Melbourne, Vic, 30 January 2012.
- Brown R, Livingston P, McNair R & Hughes T. Cancer Prevalence and cancer risk factors among Australian sexual minority. *7th Australian Women's Health Conference*, Sydney, NSW, 7 - 10 May 2013.

- Brown R. Cancer risk and diagnosis in Australian women of diverse sexuality. *BIT 8th Annual World Cancer Congress 2015 - New Perspectives in Cancer Research*, Busan, Korea, 7-9 December 2015.
- Brown R. Cancer risk and diagnosis among Australian women of diverse sexuality. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: A404	Sitting, physical activity and direct health care and pharmaceutical costs in mid-age and older women.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Paul Gardiner - Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

Both prolonged sitting and physical inactivity have been associated with numerous chronic conditions such as diabetes and obesity. This study examined what the implications of the combined effects of prolonged sitting and physical inactivity are for health care and medication use (quantified as costs). The association between sitting, physical activity and costs was studied from 2004 to 2010 in mid-age women and from 2002 to 2008 in older women.

**Research outcomes:**

*Publications*

- Health care costs associated with prolonged sitting and inactivity. Peeters G, Mishra G, Dobson A & Brown W. *American Journal of Preventive Medicine*, 2014, 46 (3) 265-272.

*Conferences, seminars and workshops:*

- Health care costs associated with prolonged sitting and inactivity. Peeters G, Mishra G, Dobson AJ & Brown WJ. *Gerontological Society of America Annual Scientific Meeting*, Washington DC, USA, 5 - 9 November 2014.

Project: A452	The interaction of social support and physical activity on obesity over 12-years in mid-aged and younger women
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Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Dr Nicola Burton - School of Applied Psychology, Griffith University</li> <li>• Dr Toby Pavey - School of Exercise and Nutrition Sciences, Queensland University of Technology</li> </ul>
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Evidence suggests people with strong social networks have lower mortality and morbidity and better self-rated health. Further, emerging evidence suggests that weight status and physical activity are affected by social networks. This study aimed to longitudinally assess the interactional association of social support and physical activity on weight status (obesity), and whether this differs between mid-aged and younger women.

**Research outcomes:**

*Publications:*

- Which women are highly active over a 12-year period? A prospective analysis of data from the Australian Longitudinal Study on Women's Health. Pavey T, Kolbe-Alexander T, Uijtdewilligen L & Brown W. *Sports Medicine*, 2017, 47 (12) 2653-2666.

*Conference, seminars and workshops:*

- Is the recommendation of 300 minutes of physical activity a week achievable? Pavey TG, Kolbe-Alexander T, Uijtdewilligen L & Brown WJ. *ASICs Conference of Science and Medicine in Sport*, Sanctuary Cove, Australia, 21-24 October 2015.
- Award: Wendy Ey 'Women in Sport Award' awarded to: Pavey TG, Kolbe-Alexander T, Uijtdewilligen L, Brown WJ for 'Is the recommendation of 300 minutes of physical activity a week achievable?', *ASICs Conference of Science and Medicine in Sport*, Sanctuary Cove, Australia, 21-24 October 2015.

Project: A503	Consent to data linkage in women aged 18-23 in 2012-13
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Jennifer Powers - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Anna Graves - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• A/Prof Deirdre McLaughlin - Melbourne School of Population and Global Health, The University of Melbourne</li> <li>• Dr Janni Leung - The University of Queensland</li> <li>• Ryan Tuckerman - Research Centre for Gender, Health and Ageing, University of Newcastle</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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Linkage to administrative datasets is becoming increasingly important for large cohort surveys, such as the ALSWH. Linkages can substantially enhance the utility of the survey data and allow researchers to answer questions which are not readily answerable through the use of survey data alone. The online survey for the cohort of women aged 18-23 in 2012-13 included a request for the women to consent to linkage to administrative datasets. Possible variables associated with non-consent were explored.

**Research outcomes:**

- Consenters and refusers in the new young cohort of the Australian Longitudinal Study on Women's Health. Graves A. *International Data Linkage Conference*, Vancouver, Canada, 28 - 30 April 2014.
- Consenting adults? Why do some young women refuse consent to data linkage? Jackson C (authors: Graves A, McLaughlin D, Leung J & Powers J). *The Farr Institute 2015 International Conference*, St Andrews, Scotland, 26 - 28 August 2015.

Project: A517	Social capital, healthcare and older women living in remote and very remote Australia
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Prasuna Reddy - Centre for Rural and Remote Mental Health (CRRMH), The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Jane Rich - Faculty of Health and Medicine, The University of Newcastle</li> <li>• A/Prof Kerry Inder - School of Medicine and Public Health, The University of Newcastle</li> <li>• Prof David Perkins - The University of Newcastle</li> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This analysis sought to understand older women's of healthcare in remote and very remote Australia by exploring and appreciating their contribution as social capital. Free text comments made by women in the 1921-26 cohort were examined thematically describe the complexities and details of healthcare in rural Australia. By appreciating the value of social networks this research placed women's experiences of healthcare into a social capital framework.

**Research outcomes:**

- Who cares for whom? Giving and receiving healthcare for women over 70 in remote Australian places. Rich J, Inder K, Harris M, Perkins D & Byles J. 10<sup>th</sup> IAGG (*International Association of Gerontology and Geriatrics*) Asia/Oceania 2015, Chiang Mai, Thailand, 19 - 22 October 2015.

Project: A528	Is level of physical activity associated with risk of hospital admission, length of stay and primary reason for admission?
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Paul Gardiner - Centre for Research in Geriatric Medicine, The University of Queensland</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

People who are physically inactive have higher risks of a number of chronic conditions such as diabetes and cardiovascular diseases. Inactivity is also associated with higher health-related costs. A large contributor to health-related costs is hospital admission, however, not much is known about the relationship between physical activity and risk of hospital admission and length of stay. This study examined whether physical activity is associated with hospital admission, length of stay and primary cause of admission.

**Research outcomes**

- Peeters GMEE, Gardiner PA, Dobson AJ & Brown WJ. Associations between physical activity, medical costs and hospitalisations in older Australian women: Results from the Australian Longitudinal Study on Women's Health. *Journal of Science and Medicine in Sport*. 2018, 21(6):604-608. doi: 10.1016/j.jsams.2017.10.022.

Project: A530	Cumulative physical activity and BMI.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Toby Pavey - School of Exercise and Nutrition Sciences, Queensland University of Technology</li> <li>• Dr Sjaan Gomersall - The University of Queensland</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

There is a clear inverse relationship between volume of physical activity and body mass index (BMI). However, most of this evidence comes from cross-sectional or repeated measures data. Therefore, accumulated physical activity overtime is often overlooked. This study aimed to examine the association between accumulated physical activity over 12 years and subsequent BMI status in young and mid-aged women

#### Research outcomes

##### *Publications:*

- Long term effects of physical activity level on changes in healthy Body Mass Index over 12 years in young adult women. Pavey TG, Peeters GMEE, Gomersall SR, & Brown WJ. *Mayo Clinic Proceedings*, 2016, 91 (6); 735–744.

##### *Conferences, seminars and workshops:*

- The association between accumulated physical activity and BMI in young and mid-aged women. Pavey TG, Peeters G, Gomersall S & Brown WJ. *Conference of Science and Medicine in Sport (Be Active) 2014*, Canberra, ACT, 15 - 18 October 2014.

Project: A571	Are women who drink more caffeinated drinks engaging in more physical activity?
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Dr Tina Skinner - School of Human Movement Studies, The University of Queensland</li> <li>• Dr Michael Leveritt - School of Human Movement Studies, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Rodrigo Ramos da Silva Chaves - School of Human Movement Studies, The University of Queensland</li> <li>• Dr Luciana Torquati - Centre for Research in Exercise, Physical Activity and Health, The University of Queensland</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>
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Caffeine is the most widely used drug in the world. Readily available from dietary sources, caffeine is most commonly ingested in beverages such as coffee, tea and cola drinks. Caffeine is a stimulant commonly used by athletes to improve exercise capacity and reduce perceived exertion. However, whether similar benefits of caffeine are also observed in less physically active individuals is unclear. Indeed, research is yet to establish whether a relationship exists between coffee intake or any other caffeinated drink and physical activity levels. This project investigated whether people who drink more caffeinated drinks engage in more physical activity.

One manuscript has been submitted to the *Journal of Epidemiology & Community Health* and is currently under review.

Project: A580	Lifestyle variables as a major correlate of depression among young Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Ingrid Rowlands - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Emma Lovat - The University of Newcastle</li> </ul>

Depression is one of the world's leading mental illnesses. In Australia 1 in 8 men and 1 in 5 women on average experience this disorder. (BeyondBlue, 2015) Mental health problems in general are a growing concern among Australian health organizations especially in regard to the younger generation. Recent studies have suggested a relationship exists between unhealthy lifestyle factors and mental health disorders. It was found that both depression and anxiety were significantly associated with physical inactivity and alcohol and smoking habits in both sexes, and these were higher for women (Bonnet, 2005). Other studies have explored the link between depression and demographic variables such as socioeconomic status. Lorant et al (2003) found socioeconomic inequality in depression with people

coming from a low-socioeconomic background being at a higher risk of depression. There have also been multiple studies that attribute proportion of life events, such as how much a person has been exposed to forms of abuse or bullying, to developing disorders such as depression. Using ALSWH data from the 1989-95 birth cohort, this project examined factors associated with a diagnosis of depression. Emma Lovat's undergraduate degree was awarded in 2015.

Project: A581	Contributing factors of self-harm in young Australian women
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Ingrid Rowlands - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Jake Jubellin - The University of Newcastle</li> </ul>

This project analysed the data collected by ALSWH concerning the 1989-95 cohort to determine the major contributing factors of the occurrence of self-harm in young Australian women. Using logistic regression and the backward elimination method we aimed to develop a model that can be used to aid policy makers and health services in the prevention and treatment of self-harm. Jake Jubellin's undergraduate degree was awarded in 2015

Project: A582	Factors contributing to diagnosed anxiety among Australian females aged between 18-23.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Ingrid Rowlands – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Sarah Williams - The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Previous research highlights the pertinence of further investigation of reported anxiety disorders among women; especially young women aged between 18-23 years old. This study aimed to observe a large sample of women aged 18-23 in order to ascertain factors associated with being diagnosed with an anxiety disorder. Previous research suggests that risk taking behaviours and other mental health disorders (including depression) are highly correlated with anxiety. It is hypothesised that these variables will be associated with diagnosed anxiety disorders among a large, generalisable sample of Australian women aged between 18-23 years old. This project contributed towards Sarah Williams's undergraduate degree, which was awarded in 2015.

Project: A590	Weight change patterns of parous and nulliparous women; a longitudinal study.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Davis - University of Canberra</li> <li>• Prof Maralyn Foureur - University of Technology Sydney</li> <li>• Prof Ellen Aagaard Nohr - University of Southern Denmark</li> <li>• Dr Fenglian Xu - University of Technology Sydney</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

The prevalence of overweight and obesity in Australia is increasing with latest data indicating that 60% of adult Australians are overweight or obese. While age, gender, ethnicity, socioeconomic status and geographic location are associated with overweight and obesity, pregnancy has also been identified as an important trigger for weight gain in women. We do not have a good understanding of the role that pregnancy plays in long term weight change in an Australian population. This study addressed this important issue, with a paper published in *Obesity* that was widely reported in the national media, (eg. [Sydney Morning Herald](#)).

**Research outcomes:**

- Long-term weight gain and risk of overweight in parous and nulliparous women. Davis D, Brown WJ, Foureur M, Nohr EA & Xu F. *Obesity*, 2018.26(6): 1072-1077.

Project: A602	Weight cycling prevalence and clinical health outcomes in mid age women in the Australian Longitudinal Study of Women's Health
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Toby Pavey - School of Exercise and Nutrition Sciences, Queensland University of Technology</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Claire Madigan - Oxford University</li> <li>• Dr Amanda Daley - University of Birmingham</li> <li>• Prof Kate Jolly - School of Health and Population Sciences, University of Birmingham</li> <li>• Prof Wendy Brown School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>
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The number of people who are classified as overweight and obese has increased. Many people attempt to lose weight but unfortunately most people tend to regain the weight they have lost. Therefore people may experience weight loss and weight regain multiple times throughout their life. This has been termed weight cycling. These continued weight loss/regain cycles are thought to be harmful for health, however evidence is conflicting. Here we aimed to identify how many women experience weight cycling, explore the characteristics of these women and determine whether weight cycling is associated with adverse health outcomes.

**Research outcomes:**

*Publications:*

- Is weight cycling associated with adverse health outcomes? A cohort study. Madigan CD, Pavey T, Daley AJ, Jolly K & Brown W. *Preventive Medicine*, 2018, 108; 47-52.
- Yo-yo dieting doesn't necessarily make you heavier in the long run. Madigan C & Brown W. *The Conversation*, 2018. <https://theconversation.com/yo-yo-dieting-doesnt-necessarily-make-you-heavier-in-the-long-run-92435>

*Conferences, seminars and workshops*

- Weight cycling prevalence and the association with BMI and mental health in mid age women in the Australian Longitudinal Study of Women's Health. Madigan C. *13th International Congress on Obesity*, Vancouver, Canada, 1-5 May 2016.

Project: A652	The influence of daily living circumstances on late life changes in women's emotional well-being
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Jane Fisher - Jean Hailes Research Unit, Monash University</li> <li>• Dr Thach Tran - Jean Hailes Research Unit, Monash University,</li> <li>• Dr Carlene Britt - Monash University</li> <li>• Dr Andrea Curtis - Monash University</li> <li>• Dr Rosanne Freak-Poli - Monash University</li> <li>• Dr Karin Hammarberg - Monash University</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Maggie Kirkman - Monash University</li> <li>• Dr Judy Lowthian - Monash University</li> <li>• Dr Alice Owen - Monash University</li> <li>• Dr Heather Rowe - Monash University</li> <li>• Dr Joanne Ryan - Monash University</li> <li>• Dr Stephanie Ward - Monash University</li> <li>• A/Prof Leigh Tooth – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
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Mental health is more than the absence of mental illness, and includes capacities to adapt to day-to-day stresses of normal life and the ability to work productively, and make a contribution to the community, indicated by emotional and social as well as physical well-being. Investigations of mental health have focused predominantly on understanding the nature, prevalence and determinants of mental disorders, but these do not reveal the characteristics and circumstances of optimal emotional wellbeing. This study investigated the determinants, including social and economic circumstances and physical health, of trajectories of optimal emotional well-being among older Australian women. Findings have been published in *Aging and Mental Health*.

**Research outcomes:**

- Mental health trajectories among women in Australia as they age. Tran T, Hammarberg K, Ryan J, Lowthian J, Freak-Poli R, Owen A, Kirkman M, Curtis A, Rowe H, Brown H, Ward S, Britt C & Fisher J. *Aging and Mental Health*, 2018. Published online 23 May 2018, DOI: 10.1080/13607863.2018.147445

Project: A665	Educational mobility by younger and mid-aged women.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• A/Prof Leigh Tooth – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Educational mobility by women, particularly mid-age women, is rarely studied. In a previous analysis we found 53% of younger and 12% of mid-age women showed educational mobility over the course of six surveys and that this educational mobility influenced their physical and mental health in different ways. In this analysis, we looked at determining what baseline factors might predict or be associated with women who are or are not educationally mobile. Findings have been published and also presented at the 2017 *World Congress on Public Health*.

**Research outcomes:**

*Publications:*

- Factors associated with educational mobility in mid-age Australian women. Tooth L & Mishra G. *Maturitas*, 2017, 96; 51-53.

*Conferences, seminars and workshops:*

- Factors associated with educational mobility in mid-age Australian women. Tooth L. *15<sup>th</sup> World Congress on Public Health*, Melbourne, Vic, 3-7 April 2017.

Project: A684	Health service use at the end of life by older Australian women with chronic conditions.
Collaborative Investigators	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Mr Kailash Thapaliya - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This project was conducted for the Palliative Care Section, Australian Government Department of Health. It involved an analysis of data for women born in the ALSWH 1921-26 cohort to understand health and aged care service use within the two last years of life for women with:

- Dementia (including Alzheimer’s disease, vascular dementia, other dementia)
- Heart Disease (including ischemic heart disease, heart failure, other heart disease)

- Stroke
- Chronic Lung Disease (including asthma, bronchitis and emphysema)

**Research outcomes:**

- *Health service use at the end of life by older Australian women with chronic conditions.* (2018). Dobson A, Waller M, Forder P, Doja-Gore X, Hockey R, Byles J and Mishra G. Report prepared for the Australian Government Department of Health, May 2018.

Project: A635	The link between menopausal status and the influence of timing of exposure to physical activity on the onset of joint symptoms in women.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Dr Geeske Peeters - Global Brain Health Institute, Trinity College Dublin</li> <li>• Prof Flavia Cicuttini - Department of Epidemiology and Preventative Medicine, Monash University</li> <li>• Dr Kim Edwards - Nottingham University</li> <li>• Dr Julia Newton - Oxford University Hospitals</li> <li>• Prof Nigel Arden - Department of Orthopaedics, University of Oxford</li> <li>• Dr Archan Bhattacharya - Nottingham University</li> <li>• Prof Philip Conaghan - Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds</li> <li>• Prof Anthony Redmond - Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds</li> <li>• A/Prof Anna Barker - School of Public Health and Preventative Medicine, Monash University</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Chronic joint pain and stiffness, the cardinal symptoms of osteoarthritis, are a major cause of disability and reduced quality of life. Physical activity is believed to play a protective role in the onset of joint pain, however, previous research suggest that the role of physical activity may be different before and after menopause. This study examined the effect of timing of exposure to physical activity on the onset of joint symptoms separately in premenopausal women and postmenopausal women. Findings have been published, and also presented internationally.

## Research outcomes:

### Publications:

- Peeters G, Edwards KL, Brown WJ, Barker AL, Arden N, Redmond AC, Conaghan PG, Cicuttini F & Mishra GD. Potential effect modifiers of the association between physical activity patterns and joint symptoms in middle-aged women. *Arthritis Care Research*, 2017, 70(7); 1012-1021. DOI: 10.1002/acr.23430.

### Presentations, seminars and workshops:

- The link between menopausal status and the influence of timing of exposure to physical activity on the onset of joint symptoms in women. Peeters G. *Seminar: Academic Orthopaedics, Trauma and Sports Medicine*, Nottingham University, Oct 2016.
- The link between menopausal status and the influence of timing of exposure to physical activity on the onset of joint symptoms in women. Peeters G. *Seminar: Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences*, University of Oxford, Sept 2016.
- The link between menopausal status and the influence of timing of exposure to physical activity on the onset of joint symptoms in women. Peeters G. *Seminar: Leeds Institute of Rheumatic and Musculoskeletal Medicine*, University of Leeds, Sept 2016.

Project: A720	Major Report M
Collaborative Investigators:	<ul style="list-style-type: none"><li>• A/Prof Leigh Tooth – Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li><li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li><li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li></ul>

This project formed the quantitative basis of the 2017 report '*From child care to elder care: Findings from the Australian Longitudinal Study on Women's Health*', which was the 2017 Major Report for the Department of Health. The project examined caregiving primarily in the 1973-78, 1945-51 and 1921-26 cohorts. Aspects of caregiving that were analysed included child care, caring for grandchildren/other

children, and caring for people with a disability or frailty. Associations between caring and socioeconomic determinants, health outcomes and health service use were examined.

**Research outcomes:**

- *From child care to elder care: Findings from the Australian Longitudinal Study on Women's Health.* Tooth L, Loxton D, Chan H, Coombe J, Dobson A, Hockey R, Townsend N, Byles J & Mishra G. Report prepared for the Australian Government Department of Health, May 2018.

## 12. APPENDIX B: Substudies

### 12.1 Current substudies

Project: W068	Perinatal mental health: Psychosocial assessment, service utilisation and maternal and infant outcomes
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Marie-Paule Austin - Perinatal and Women's Mental Health, University of New South Wales</li> <li>• Dr Nicole Reilly - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Jeanette Milgrom - School of Behavioural Sciences, The University of Melbourne</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Amy Anderson - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Leanne Brown - The University of Newcastle</li> <li>• A/Prof Kym Rae - School of Medicine and Public Health, The University of Newcastle</li> <li>• Lucy Kocanda - The University of Newcastle</li> <li>• Dr Tracy Schumacher - Department of Rural Health, The University of Newcastle</li> </ul>

This primary aim of this study is to evaluate the impact of a primary prevention, early intervention strategy (perinatal mental health assessment) on service utilisation and health outcomes of mothers in Australia, and to examine equity of access to this national population-based initiative. It will provide an evidence-base from which resistance to routine depression screening and psychosocial assessment in the perinatal period can be addressed, with possible benefits for health services, the mother, infant, family and community.

#### Research outcomes

##### *Publications:*

- Disparities in reported psychosocial assessment across public and private maternity settings: A national survey of women in Australia. Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *BMC Public Health*, 2013,13: 632.

- Referral for management of emotional health issues during the perinatal period: does mental health assessment make a difference? Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *Birth: Issues in Perinatal Care*, 2013, 40 (4); 297-306.
- History of pregnancy loss increases the risk of mental health problems in subsequent pregnancies but not in the postpartum. Chojenta C, Harris S, Reilly N, Forder P, Austin M-P & Loxton D. *PLoS One*, 2014, 9 (4); e95038.
- The impact of routine assessment of past or current mental health on help-seeking in the perinatal period. Reilly N, Harris S, Loxton D, Chojenta C, Forder P & Austin M-P. *Women & Birth*, 2014, 27(4); e20-e27.

*Conferences, seminars and workshops:*

- Adverse reproductive events and mental health and parenting outcomes. Chojenta C & Harris S. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.
- Intimate partner abuse and perinatal mental health. Loxton D & Chojenta C. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.
- Disparities in reported psychosocial assessment during pregnancy and the postnatal period: A national survey of women in Australia. Reilly N, Austin M-P, Loxton D, Chojenta C, Forder P & Milgrom J. *International Biennial Congress of The Marcé Society*, Paris, France, 3 - 5 October 2012.
- Disparities in reported psychosocial assessment across public and private maternity settings.: Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *Public Health Association of Australia 42<sup>nd</sup> Annual Conference*, Melbourne, Vic, 16 - 18 September 2013.
- Referral for management of emotional health issues during the perinatal period: Does mental health assessment make a difference? Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *Public Health Association of Australia 42<sup>nd</sup> Annual Conference*, Melbourne, Vic, 16 - 18 September 2013.
- The impact of mental health assessment on help seeking during the perinatal period: A national survey of women in Australia. Reilly N, Harris S, Loxton D, Chojenta C, Forder P, Milgrom J & Austin M-P. *Australasian Marce Society Conference*, Melbourne, Vic, 11 - 12 October 2013.
- The issue of honesty during perinatal screening for depression and anxiety. Forder P, Rich J, Harris S, Reilly N, Chojenta C, Austin M-P & Loxton D. *Australasian Marce Society Conference*, Melbourne, Vic, 11 - 12 October 2013.
- Prevention and early intervention for perinatal mental health: an evaluation of outcomes for women who give birth in Australia.: Reilly N, Loxton D, Forder P, Harris S, Chojenta C, Milgrom J & Austin M-P. *Health Services Research Association of Australia and New Zealand (HSRAANZ) 9<sup>th</sup> Biennial Health Services and Policy Research Conference*, Melbourne, Vic, 7 - 9 December 2015.
- Prevention and early intervention for perinatal mental health: An evaluation of outcomes for women who give birth in Australia. Reilly N, Loxton D, Forder P, Harris S, Chojenta C, Milgrom J & Austin MP. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.

Project: W076	The profile of arthritis pain in older women.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Lynne Parkinson - Health CRN, CQ University Australia</li> <li>• Prof Isabel Higgins - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Sharyn Hunter - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• A/Prof Fiona Blyth - Pain Management &amp; Research Centre, The University of Sydney</li> <li>• Dr Thomas Lo - University of Alberta</li> <li>• Dr Katie de Luca - The University of Newcastle</li> <li>• Prof Gillian Hawker - University of Toronto and Institute for Clinical Evaluative Sciences, Canada</li> <li>• A/Prof Henry Pollard - Faculty of Health Science, Australian Catholic University, Strathfield</li> <li>• Prof Lyn March - Medicine, Northern Clinical School, The University of Sydney</li> <li>• Dr Chris Hayes - Hunter Integrated Pain Service, Hunter New England Health</li> <li>• Aron Downie - George Institute of Musculoskeletal Health</li> <li>• Scott Haldeman - University of California</li> <li>• Mr Matthew Fernandez - The University of Sydney</li> </ul>

This substudy, the profile of pain in older women, is a cross-sectional survey administered to 700 women from the mid-aged (born 1946-51) cohort. It will ask women about their health, experience of pain and arthritis condition. The aims of the research are to describe the profiles of pain experienced by a community sample of women aged in their 60's; to compare the profiles of pain for women with and without arthritis; and to investigate the impact of arthritis on health.

**Research outcomes:**

*Publications:*

- A study protocol for the profile of pain in older women: Assessing the multi dimensional nature of the experience of pain in arthritis. de Luca K, Parkinson L & Byles J. *Chiropractic & Manual Therapies*, 2014; 22-28.
- Three subgroups of pain profiles identified in 277 women with arthritis: A latent class analysis. de Luca K, Parkinson L, Downie A, Blyth F, Byles J. *Clinical Rheumatology*, 2017, 36 (3); 625-634.

- The relationship between spinal pain and comorbidity: A cross-sectional analysis of 579 community-dwelling, older, Australia women. de Luca K, Parkinson L, Haldeman S, Byles J, Blyth F. *Journal of Manipulative and Physiological Therapeutics*, 2017, 40 (7); 459-466.

*Conferences, seminars and workshops:*

- A cross sectional survey of pain in older women with arthritis: Study protocol. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *11<sup>th</sup> National Conference of Emerging Researchers in Ageing - Making an Impact*, Brisbane, Qld, 19 - 20 November 2012.
- Development and pilot of a survey instrument for measuring pain in older women with arthritis (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *Chiropractic and Osteopathic College of Australasia National Conference - The Ageing Spine*, Sydney, NSW, 13 - 14 October 2012.
- A cross sectional survey of pain in older women with arthritis: A study protocol (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *Chiropractic and Osteopathic College of Australasia National Conference - The Ageing Spine*, Sydney, NSW, 13 - 14 October 2012.
- Development and pilot of a survey instrument for measuring pain in older women with arthritis (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *11<sup>th</sup> National Conference of Emerging Researchers in Ageing - Making an Impact*, Brisbane, Qld, 19 - 20 November 2012.
- Pain and the older woman: Results from a cross-sectional survey. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *2014 AAG & ACS Regional Conference. Sharing Care for Older Australians: Working Together*, Port Macquarie, NSW, 5 - 7 March 2014.
- How catastrophic are different types of pain in women with arthritis (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *7<sup>th</sup> World Congress, World Institute of Pain*, Maastricht, Netherlands, 7 - 10 May 2014.
- How is the experience of pain measured in older, community dwelling women with osteoarthritis – A systematic review of the literature (poster presentation). de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *7<sup>th</sup> World Congress, World Institute of Pain*, Maastricht, Netherlands, 7 - 10 May 2014.
- How does neuropathic pain affect quality of life in women with arthritis. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *7<sup>th</sup> World Congress, World Institute of Pain*, Maastricht, Netherland, 7 - 10 May 2014.
- How catastrophic are different types of pain in women with arthritis. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *142<sup>nd</sup> APHA Annual Meeting and Exposition*, New Orleans, USA, 15 - 19 November 2014.

- How does neuropathic pain affect quality of life in women with arthritis. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *Chiropractic and Osteopathic College of Australia (COCA) Biennial Conference*, Sydney, NSW, 10 - 12 October 2014.
- How does neuropathic pain affect quality of life in women with arthritis. de Luca K, Parkinson L, Byles J, Blyth F & Pollard H. *CAANSW Inaugural Research Symposium*, Sydney, NSW, 13 - 14 September 2014.

Project: W091	Mother's and their Children's Health (MatCH) study - Phase I
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• A/Prof Leigh Tooth - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Richard Hockey - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Prof Ilona Koupil - Stockholm University &amp; Karolinska Institute</li> <li>• Prof Peter Davies - Centre for Children's Health Research, The University of Queensland</li> <li>• Prof Virginia Slaughter - School of Psychology, The University of Queensland</li> <li>• A/Prof Kylie Hesketh - School of Exercise and Nutrition Sciences, Deakin University</li> <li>• Prof Carol Bower - Telethon Institute for Child Health Research (TICHR), University of Western Australia</li> <li>• Prof Peter Sly - Centre for Children's Health Research, The University of Queensland</li> <li>• Colleen Loos - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Hsiu-Wen Chan - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Akilew Adane - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Katrina Moss - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Sifan Cao - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• YungTing Chang - University of Nottingham</li> </ul>
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The MatCH study aims to take a family-centred approach to advance understanding of child health and development in terms of all the children in a family unit, by investigating factors with regard to a) the history of maternal and family characteristics and b) their effects on the health and development of all the children in the family. The study combines detailed data from a national cohort of women with new survey data on their children to paint a picture of family health and health service use that is unparalleled, supporting a more integrated and targeted approach to the delivery of preventative and primary health care for all Australian families.

The baseline survey was conducted from August 2016 to May 2017. 3,063 mothers provided data on 5780 children.

**Research outcomes:**

- [MatCH \(Mothers and their Children's Health\) Profile: Offspring of the 1973-78 cohort of the Australian Longitudinal Study on Women's Health](#). Mishra GD, Moss K, Loos C, Dobson AJ, Davies PSW, Loxton D, Hesketh KD, Koupil I, Bower C, Sly P, & Tooth L. *Longitudinal and Life Course Studies:International Journal*, 2018, 9(3): 351-375.
- Maternal preconception weight trajectories are associated with offsprings' childhood obesity. Adane A, Dobson A, Tooth L & Mishra G. *International Journal of Obesity*, 2018, 42(7). DOI: 10.1038/s41366-018-0078-1

Project: W096	Women's constrained choices: How does it affect women?
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Christina Lee - School of Psychology, University of Queensland</li> <li>• Prof Jayne Lucke - Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> <li>• Dr Melissa Johnstone - Institute of Early Childhood, Macquarie University</li> <li>• Prof Deborah Loxton Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Given the impact that childbearing has on Australian women's working careers, compared to women in other countries, there is a need to understand the extent to which women feel they are active agents in their work-family choices, and how important this is for their well-being. Through semi-structured

interviews with a subsample of women, this research aims to understand how much women see themselves as active agents in their work-family decision making, the importance of agency for their well-being, and the relative influence of policy and other sociodemographic factors on life choices for women. This will advance knowledge in work-family literature, women's life course development, and contribute to the evidence-base for policies that support the needs of women.

Project: W097	Chronic disease management and outcomes for women with diabetes.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Professor Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Dr Alexis Hure – School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof John Attia – School of Medicine and Public Health, The University of Newcastle</li> <li>• A/Prof Huy Tran – Pathology North, New South Wales Health Pathology</li> <li>• Dr Margaret Lynch – Research Innovation and Partnerships, Hunter New England Local Health District</li> </ul>

Diabetes is a global health issue. If not well managed, it can result in severe complications, increased hospitalisations and premature death. Tight glucose control is a primary goal for diabetes management. This project aims to understand the predictors of good glucose control for Australian women (particularly older women). Self-report survey data will be linked to administrative sources (MBS, PBS, hospital), and newly collected biological data. By understanding the collective impact, it will inform better management of this common chronic condition in older age.

Project: W099	Complexity, choice, and care in later life: the housing and support networks of women without children.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Cassie Curryer - Research Centre for Generational Health and Ageing; ARC Centre for Excellence in Population Ageing Research (CEPAR)</li> <li>• Prof Mel Gray - School of Social Work, The University of Newcastle</li> </ul>
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Ageing policy in Australia relies heavily on presumptions of home ownership, family caregiving, and consumer choice. These are important elements of ageing-in-place. Limited research exists about the influence of childlessness for ageing-in-place, or what older consumers actually want and need. This study explores the views of women consumers who are ageing without children about their needs, expectations, and choices regarding housing, care, and support services in later life. The study focuses on women born between 1946 and 1951 (currently aged 65 to 70 years). These women represent the leading edge of the post-Second World War baby boom generation.

**Research outcomes:**

- A feature article on this project was published in the magazine *Community Care Review* 2017 Spring edition (pp 12-13), and also online in *Australian Ageing Agenda*: <https://australianageingagenda.com.au/2017/10/19/growing-old-without-children-aged-cares-sleeper-issue/#comment-7899>

Project: W100	Reliability of Intimate Partner Violence measures: A qualitative investigation.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• A/Prof Jan Coles - Department of General Practice, Monash University</li> <li>• Ms Sarah Kabanoff - Faculty of Health, The University of Newcastle</li> </ul>

Intimate Partner Violence (IPV; domestic violence) is under reported to medical and legal practitioners and in research. Researchers have noted that information about IPV is sometimes reported inconsistently across ALSWH surveys. For example, some women have indicated that they have experienced violence from a partner or spouse at one survey but later responded that they have never had this experience. By speaking with women who have responded inconsistently to questions that ask about violence, we aim to explain underreporting of IPV and make recommendations that will facilitate more accurate measurement of IPV. More broadly, insights gained from this research may assist practitioners in facilitating disclosures of IPV.

Project: W102	Living beyond expectations: How older women demonstrate successful and healthy ageing.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Professor Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Jenny Helman - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

Centenarians are a “model of ageing well”, having lived long and delayed the onset of disease and disability until much later in life. With increasing longevity, larger numbers of people will live to 100. However, little is known about the experiences of people at this extreme old age, as few studies have included very old people and most do not have data from earlier life to put these late life experiences into a life course context. Current participants of the Australian Longitudinal Study on Women’s Health (ALSWH) include an elite group of over 1400 women who are already past their mid-90s, and who are likely to live to 100. In-depth interviews with a sample of these women will provide a rare opportunity to gain insights into the experience of extreme old age, and to contrast their current and retrospective views with the trajectories and circumstances presented by the quantitative and qualitative data collected by ALSWH since 1996, when the women were in their 70s. The interviews will be framed by the new WHO healthy ageing framework, and will focus on women’s ability to do the things they want to do, and the balance between intrinsic capacity and functional support.

## 12.2 Completed substudies

Project: W066	The predictors, antecedents and efficacy of treatment of postnatal depression in Australian women.
Collaborative Investigators:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• Prof Jayne Lucke - Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> <li>• Dr Jane Rich - Faculty of Health and Medicine, The University of Newcastle</li> <li>• Anna Dawes - The University of Newcastle</li> <li>• Prof Deborah Loxton Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This substudy built on previous analyses investigating the predictors and antecedents of postnatal depression (PND) in Australian women (see A176).

While the longitudinal study data offers a rich source of information to investigate both the long and short term predictors of PND, additional detailed information is required on experiences preceding a diagnosis of PND, which can be used in conjunction with previously collected survey data. For example, events of childbirth such as mode of delivery (Brown et al, 1994), which is available in the survey data, have previously been related to the development of PND. However emotional coping through childbirth (Bloch, Rotenberg et al 2006) and duration of labour (Johnstone, Boyce et al, 2001) are not available in the survey data. Furthermore, the longitudinal study does not gather information about the diagnosis, treatment and recovery from PND, all of which were investigated in this substudy.

In-depth qualitative telephone interviews were conducted with women who indicated in Survey 4 that they had been diagnosed or treated for PND in the past, as well as with women who had indicated they had not experienced PND. Participants were selected based on responses to Survey 4 in 2006. Women were eligible if they had given birth to a child in the four years prior to Survey 4. A pool of 150 participants was drawn, half of whom had answered positively to the PND diagnosis item, and half who had answered negatively. The project is now complete, and findings are listed below.

### Research outcomes:

#### *Publications:*

- Chojenta C, Loxton D & Lucke J. 'The Perfect Mother Wouldn't Have That': Australian Women's Experiences of Motherhood and Postnatal Depression. *Archives of Women's Mental Health*, 2011, 14 (Supp 1); S62-S63. (PUBLISHED ABSTRACT).

*Presentations, seminars and workshops:*

- The perfect mother wouldn't have that: Australian women's experiences of motherhood and postnatal depression. Chojenta C, Loxton D & Lucke J. *Challenging the Boundaries: 16th Annual Qualitative Health Research Conference*, Vancouver, Canada, 3 - 5 October 2010.
- The perfect mother wouldn't have that: Australian women's experiences of motherhood and postnatal depression (poster presentation). Chojenta C, Loxton D & Lucke J. *International Marce Society Conference*, Pittsburgh, USA, 27 - 30 October 2010.

## 13. APPENDIX C: Student projects

### 13.1 Current projects

Project: A469C	The causes and consequences of hysterectomy
PhD candidate:	<ul style="list-style-type: none"><li>• Louise Wilson, The University of Queensland</li></ul>
Supervisors:	<ul style="list-style-type: none"><li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li><li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li><li>• Dr Nirmala Pandeya – QIMR Berghofer Medical Research Institute</li></ul>

Around 27,000 hysterectomies (17,500 with ovarian conservation and 9,500 with ovaries removed) were performed in Australia in 2009-2010. Prevalence of hysterectomy in the ALSWH is around 30% in the mid-age cohort and 40% in the older age cohort; approximately 13% of both cohorts have had both ovaries removed. Due to hormonal changes, women who have had a hysterectomy (with/without bilateral oophorectomy) may experience a range of health symptoms throughout mid-life that vary from women who have had a natural menopause; these in turn may have an impact on morbidity and mortality. Understanding the nature of these differences is important to inform health services planning. The aim of this project is to explore the causes and consequences of hysterectomy/oophorectomy for Australian women. This will be achieved in four phases: 1) a review of the trends in incidence and prevalence of hysterectomy and oophorectomy in Australia over the past 15 years; 2) an exploration of the social, lifestyle and reproductive characteristics of women with a hysterectomy (with/without bilateral oophorectomy); 3) an analysis of whether there is an association between having a hysterectomy (with/without bilateral oophorectomy) and health outcomes (depression, diabetes, heart disease, osteoporosis, asthma) and mortality (all-cause and cardio-vascular); and 4) a comparison of the health symptom profiles experienced by women with a hysterectomy and women without a hysterectomy over the study period.

#### Research outcomes:

##### *Publications:*

- Hot flushes and night sweats symptom profiles over a 17-year period in mid-aged women: The role of hysterectomy with ovarian conservation. Wilson L, Pandeya N, Byles J & Mishra G. *Maturitas*, 2016, 91; 1-7.
- Hysterectomy and incidence of depressive symptoms in midlife women: The Australian Longitudinal Study on Women's Health. Wilson L, Pandeya N, Byles J & Mishra G. *Epidemiology and Psychiatric Sciences*, 2017, 13; 1-12.

- Hysterectomy and perceived physical function in middle-aged Australian women: A 20-year population-based prospective cohort study. Wilson L, Pandeya N, Byles J & Mishra G. *Quality of Life Research*, 2018, 27; 1501-1511.

*Conferences, seminars and workshops:*

- An exploration of hot flushes and night sweats symptom patterns experienced in midlife by women with a hysterectomy. Wilson L. *University of Queensland, School of Public Health, Research Higher Degree Conference 2015*, Herston, Qld, 4 November 2015.
- An exploration of hot flushes and night sweats symptom patterns over a 17 year period in mid-aged women: The role of hysterectomy. Wilson L. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- Hysterectomy and incidence of depressive symptoms in the mid-aged cohort of the Australian Longitudinal Study on Women's Health. Wilson L. *Research Higher Degree Conference, School of Public Health, University of Queensland, Herston, Qld*, 2 November 2016.
- Hysterectomy and incidence of depressive symptoms in middle-aged Australian women. Wilson L. *Australasian Epidemiological Association (AEA) Annual Scientific Meeting 2017*, Sydney, NSW, 28 - 30 September 2017.

Project: A492B	The experience of breastfeeding for women with chronic health conditions.
Honours students:	<ul style="list-style-type: none"> <li>• Annie Smith - The University of Newcastle</li> <li>• Shannon Boschuetz - The University of Newcastle</li> <li>• Janelle Murphy - The University of Newcastle</li> </ul>
Supervisors:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Karen Mate - School of Biomedical Sciences and Pharmacy (Human Physiology), The University of Newcastle</li> </ul>

Characterised by long-term development and persistent symptomatology, chronic conditions impact on healthcare expenditure and burden of disease. Women with chronic conditions may require specialised care and advice during postpartum to ensure optimal health for mother and baby. Existing evidence suggests that women with chronic conditions are less likely to breastfeed, although there is increasing evidence that breastfeeding is generally optimal for women with chronic conditions and their infants. Despite this, there are no specific guidelines to direct clinicians and patients in these situations. The aim of this project is to examine breastfeeding initiation and duration among women with chronic conditions and assess the impact of medication use.

Project: A521C	Dietary intake of women with disordered eating compared to those without disordered eating - longitudinal data
Undergraduate student:	Chelsea Carle, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Leanne Brown - The University of Newcastle</li> <li>• Deanne Harris - Hunter New England Health</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This study will investigate the dietary intakes of women with disordered eating from the 1973-78 cohort of the ALSWH. A cross-sectional analysis of food frequency data from the 1973-78 cohort at Survey 3 in 2003 will be compared to dietary intakes for those with and without disordered eating with data from Survey 5 in 2009. Macro and micronutrient intakes will be compared to the Nutrient Reference Values for Australia and New Zealand. This study will also determine if there are differences in dietary intakes in urban compared to non-urban women with disordered eating.

**Research outcomes:**

- A six-year follow-up of women with restrictive eating in the Australian Longitudinal Study on Women's Health (poster presentation). Carle C, Brown L, Mishra G, Grotowski M & Hure A. *University of Newcastle, School of Health Sciences Research Day*, Newcastle, NSW, 30 June 2017.
- A six-year follow-up of women with restrictive eating in the Australian Longitudinal Study on Women's Health. Carle C, Brown L, Mishra G, Grotowski M & Hure A. *Australian Society for Medical Research Newcastle Satellite Scientific Meeting*, Newcastle, NSW, 2 June 2017.

Project: A537	The prevalence and characteristics of consultation with a massage therapist among young and middle aged women.
PhD Candidate:	Suzy Ladanyi, University Technology Sydney
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Jon Adams - School of Public Health, University Technology Sydney</li> <li>• Professor David Sibbritt - Faculty of Health, University Technology Sydney</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Jayne Lucke – Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> </ul>

Massage is a popular form of Complementary and Alternative Medicine (CAM). It has become increasingly popular among women and used for a variety of physical and psychological conditions (Adams et al. 2011; Cambron et al. 2007; Listing et al. 2009; Meurk et al. 2013). However, there has been no critical analysis on the prevalence of massage use or the characteristics of massage users as a single treatment modality for women in Australia. The proposed study will determine the prevalence of young and mid aged women, and analyse the use of massage in relation to demographic data, physical and mental health status and health services factors among this population.

**Research outcomes:**

- Healthcare practitioner utilisation for back pain, neck pain and/or pelvic pain during pregnancy: An analysis of 1835 pregnant women in Australia. Sibbritt D, Ladanyi S & Adams J. *International Journal of Clinical Practice*, 2016, 70 (10); 825-831.

Project: A549	Dysfunctional Uterine Bleeding and Premenstrual Syndrome and use of complementary and alternative medicine (CAM).
PhD Candidate:	Carole Fisher, University Technology Sydney
Supervisors:	<ul style="list-style-type: none"> <li>• Professor David Sibbritt - Faculty of Health, University Technology Sydney</li> <li>• Dr Louise Hickman – Faculty of Health, University Technology Sydney</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Dysfunctional uterine bleeding (heavy and/or irregular periods) affects around 20% of women and 80-90% experience varying degrees of premenstrual syndrome symptoms in their reproductive years, over

40% are severe to moderate. These women may lose quality of life and their ability to work effectively and high demands are placed on primary and secondary health care sectors. Protocols for managing all three conditions can have potential serious side-effects. As women increasingly use Complementary and Alternative Medicine (CAM) therapies for many health conditions, they are likely to have used CAM therapies to treat these problems. This study will examine the CAM and other health care services utilised by these women and the associations with dysfunctional uterine bleeding and premenstrual syndrome.

**Research outcomes:**

- The use of complementary and alternative medicine by 7427 Australian women with cyclic perimenstrual pain and discomfort: A cross-sectional study. Fisher C, Adams J, Hickman L & Sibbritt. *BMC Complementary and Alternative Medicine*, 2016, 16 (1); 129.
- Cyclic perimenstrual pain and discomfort and Australian women's associated use of complementary and alternative medicine: A longitudinal study. Fisher C, Hickman L, Adam J & Sibbritt D. *Journal of Women's Health*, 2018, 27 (1); 40-50.

Project: A553	Trajectories of aged care service use: Evidence from the Australian Longitudinal Study on Women's Health
PhD Candidate:	Dr Mijanur Rahman, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Jimmy T Eford - The University of Newcastle</li> </ul>
Other collaborators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> </ul>

This project will examine trajectories into and through the aged care system, to consider how the patterns and use of aged care are influenced by changing needs and circumstances throughout late life. The aim is to examine different patterns and pathways through community and residential aged care for a large cohort of older Australian women, and to understand how different levels of care operate across time and in accordance with the changing levels of need.

**Research outcomes:**

- The types and patterns of HACC service use among a large cohort of Australian women as they age from 77-80 to 87-90. Rahman M. *Emerging Research on Ageing 2016*, Canberra, ACT, 31 October-01 November 2016.
- Repeated time to admission and length of stay in residential aged care: A recurrent event analysis using counting process model. Rahman M, Eford TJ & Byles EJ. *Young Statistician Conference - Modelling Our Future*, Gold Coast, Qld, 26-27 September 2017.
- Trajectories to aged care service use among older Australian women: A repeated measure latent class analysis. Rahman M, Eford TJ & Byles J. Oral presentation at the *47<sup>th</sup> Annual Conference of British Society for Gerontology*, Manchester United Kingdom, 4-6 July, 2018.
- Predicting transition of older women into and through the aged care system over time: A multi-state modelling approach using aged care linked data. Rahman M, Eford TJ & Byles J. Oral presentation at the *37<sup>th</sup> International Conference of the International Society for Clinical Biostatistics*, Melbourne, 26-30 August, 2018.
- Capitalising on longitudinal data to evaluate aged care. Rahman M, Eford TJ & Byles J. Oral presentation at the *Emerging Health Policy Research Conference )EHPR(*, University of Sydney, 26 July, 2018.

Project: A563	Women's Experiences of Sleep Problems and their use of Health Services and Self-Care including Complementary and Alternative Medicine (CAM).
PhD Candidate:	Sophie Meredith, University Technology Sydney
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Jon Adams - School of Public Health, University of Technology Sydney</li> <li>• Professor David Sibbritt - Faculty of Health, University of Technology Sydney</li> <li>• Dr Jane Frawley - University of Technology Sydney</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

This study aims to undertake an analysis of women's use of complementary and alternative medicine (CAM) and its association to fatigue and sleep problems. Whilst there is research exploring fatigue-related symptoms of cancer and the use of CAM (Bower, Garet, Sternlieb, Ganz, Irwin, Olmstead, Greendale 2011), there is little research on how women use CAM to treat symptoms that may be related

to a whole host of other illnesses and issues. This project will gauge how much CAM is being used by women to treat fatigue and sleep problems, helping inform crucial future research into the effectiveness of the treatments themselves.

**Research outcomes**

- The utilization of health services and self-care by older women with sleeping problems: Results from a nationally representative sample of 9,110 women. Meredith S, Frawley J, Adams J & Sibbritt D. *Journal of Aging and Health*, 2017. Published online 4 January 2017, doi: 10.1177/0898264316686424

Project: A567	Family formation and the demand for private health insurance
Student:	Nathan Kettlewell – The University of Sydney
Supervisor:	<ul style="list-style-type: none"> <li>• Dr Denise Doiron – School of Economics, The University of Sydney</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>• A/Prof Leigh Tooth – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Our study will investigate the role of family formation, in particular the effect of children – actual and desired- on the purchase of private hospital insurance. We expect the incentives to purchase insurance to vary depending on the stage of family formation. In particular, health care services related to pregnancy mean that the incentive effects are likely to be higher for those expecting to have more children in the future. By using a longitudinal panel of younger women, we can account for state dependency and unobserved heterogeneity in the decision to insure.

**Research outcomes:**

*Publications:*

- Three essays on consumer behavior in the Australian health insurance market. Kettlewell N, PhD Thesis (2017). University of New South Wales.

*Conferences, seminars and workshops*

- Family formation and demand for health insurance. Kettlewell N. *The 37<sup>th</sup> Annual Australian Health Economics Society Conference*, Brisbane, Queensland, 1-2 October 2015.

Project: A594	The value of continuity of care in Australian general practice.
PhD Candidate:	Dr Michael Wright
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Jane Hall - Centre for Health Economic Research and Evaluation, University of Technology Sydney</li> <li>• A/Prof Kees Van Gool - Centre for Health Economics Research and Evaluation, University of Technology Sydney</li> <li>• Prof Marion Haas - Centre for Health Economics Research and Evaluation, University of Technology Sydney</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Annette Dobson – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Continuity of care is seen as a cornerstone of high quality primary health care. In Australia, most primary health care is delivered in general practices.

The aim of this study is to explore the relationship between continuity of care with a general practitioner (GP) or general practice, and health care quality and health care outcomes.

In the first instance, the study will measure levels of continuity of care with a GP and with a general practice in the ALSWH survey population, and identify factors associated with predicting the likelihood of a woman receiving high levels of primary care with a single provider or a single practice.

Secondly, the study will examine whether greater continuity delivers higher quality care and better health outcomes in terms of disease prevention, medication compliance, use of health services, management of (chronic) disease and decreased health costs.

By better understanding the relationship between continuity of care (at provider and practice level), and health outcomes, patients can be encouraged to seek care that maximises health, and policy makers can potentially encourage health maximising and cost effective behaviour.

**Research outcomes:**

- Changing continuity of care for Australian women. Wright M, Hall J, van Gool K & Haas M. *ALSWH Scientific Meeting 2016*, Newcastle, NSW, 4 - 5 May 2016.
- From continuity to fragmentation to integrated Australian general practice. Wright M, Hall J, van Gool K & Haas M. *International Conference on Integrated Care Conference*, Barcelona, Spain, 23 - 25 May 2016.
- Continuity of care without patient enrolment. Wright M. *Emerging Health Policy Research Conference*, Sydney, NSW, 13 July 2016.

- Changing continuity of care in Australian general practice. Wright M, Hall J, van Gool K & Haas M. *Australian Health Economics Society Conference*, Fremantle, WA, 27 - 28 September 2016.
- Changing continuity of care in Australian general practice. Wright M, Hall J, van Gool K & Haas M. *GP16- RACGP National Conference*, Perth, WA, 29 September - 1 October 2016.
- The association between continuity of care and mammography rates. Wright M. *Australian Health Economics Society Conference*, Sydney, NSW, 21 September 2017.
- Continuity of care associated with improved preventative care: Evidence from an Australian cohort study. Wright M. *GP17- RACGP Annual Scientific Conference*, Sydney, NSW, 26 October 2017.
- The association between continuity of care and mammography rates. Wright M. *Health Services Research Association of Australia and New Zealand Conference*, Gold Coast, Qld, 1 November 2017.

Project: A598A	SF-6D patterns in Australian women
PhD Candidate:	Jeeva Kanesarajah, The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Prof Jenny Whitty- Norwich Medical School, University of East Anglia</li> </ul>

There is limited evidence on the longitudinal relationship between the SF-6D, a preference based measures of health derived from the SF-36, and demographic, socioeconomic and lifestyle factors. Further, little is known on what range of SF-6D scores constitute good health, or poor health. This limits its interpretability and usage. This research aims to examine changes in SF-6D as women age and to identify characteristics of those with poorer preference based measures of health for women at three different life stages. Additionally, we derive cut points for good and poor health related quality of life for the SF-6D using Short Form-1(SF-1). These findings will provide insights on differences in characteristics associated with preference based measures of health at various life stages, and improve the interpretation and usability of the SF-6D scores.

**Research outcomes:**

- The relationship between SF-6D utility scores and lifestyle factors across three life-stages: Evidence from the Australian Longitudinal Study on Women’s Health. Kanesarajah J, Waller M, Whitty J & Mishra G. *Quality of Life Research*, 2017, 26 (6) 1507-1519.

Project: A615	Ageing in place without children: A study of Australian women's experiences of ageing.
PhD Candidate:	Cassie Curryer, The University of Newcastle
Supervisor:	<ul style="list-style-type: none"> <li>• Prof Mel Gray – School of Social Work, The University of Newcastle</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

The nexus between housing, relationships, and care has important implications for successful ageing-in-place. Family caregiving plays a major role. While many women provide care for spouses, children, and grandchildren, an increasing number may lack family support in older age, particularly those women without children or experiencing family estrangement. Lack of family support is associated with greater use of community care and earlier entry into residential aged care. This study explores women's ageing and use of care services within the contexts of housing arrangements and family and social support; and considers how these might influence planning for needs in later life.

#### Research outcomes:

##### *Publications:*

- Back to my old self and life restarting: Biographies of ageing in Beck's Risk Society. Curryer C, Gray M, Byles JE. *Journal of Sociology*, 54 (2) pp. 249 – 263.  
<https://doi.org/10.1177%2F1440783318766150>

##### *Conferences, seminars and workshops:*

- A view of home: The housing and social circumstances of childless women in later life. Curryer C. The University of Newcastle, *School of Humanities and Social Sciences Research Higher Degree Symposium*, Newcastle, NSW, 1 June 2016.
- Remember, I live with my mother: The housing circumstances of women baby boomers in Australia. Curryer C. *15<sup>th</sup> National Conference of Emerging Researchers in Ageing*, Canberra, ACT, 31 October - 01 November 2016.
- Re-imagining relationships: The experience of childlessness in later life (table top presentation). Curryer C. *49<sup>th</sup> Australian Association of Gerontology Conference*, Canberra, ACT, 2 - 4 November 2016.

Project: A631	Workforce participation patterns in middle age women with breast cancer.
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PhD Candidate:	Bridie Campbell, The University of Sydney
Supervisors/collaborators:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Assoc. Prof. Lynette MacKenzie - Faculty of Health Sciences, The University of Sydney</li> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Ms Joanne Lewis - Faculty of Health Sciences, The University of Sydney</li> <li>• Dr Rob Heard - Faculty of Health Sciences, The University of Sydney</li> <li>• Prof Deborah Black - The University of Sydney</li> </ul>

Using data from the 1946-51 cohort of ALSWH, this study will define patterns of workforce participation amongst Australian women aged 55 and over who reported having breast cancer on any survey and identify the predictors of workforce participation in this group of women. The analysis will show whether women in this age group are likely to continue in full time or part time work during or after their diagnosis, as well as how these patterns of workforce participation relate to socio-demographic factors, social circumstances, particular occupations or other productive activities outside of paid employment and health conditions.

**Research outcomes:**

- Workforce participation patterns of women with breast cancer in Australia. MacKenzie L & Lewis J. *Australian National Occupational Therapy 27<sup>th</sup> National Conference & Exhibition*, Perth, WA, 19-21 July 2017
- Workforce participation patterns of women with breast cancer in Australia. Lewis, J & Mackenzie. *University of Sydney Cancer Network Symposium*, Sydney, December, 2017.
- Workforce participation patterns of women with breast cancer in Australia. Lewis, J & Mackenzie. *2<sup>nd</sup> VCCC Psycho-Oncology Conference*, Melbourne, February 2018.
- Workforce participation patterns of women with breast cancer in Australia. Lewis, J & Mackenzie. *World Federation of Occupational Therapy*, Capetown South Africa, May 2018.
- Workforce participation patterns of women with breast cancer in Australia. Lewis, J & Mackenzie. *Centrelink Allied Health Conference for Assessors*, Sydney, June 2018.

Project: A640A	Progression of chronic diseases and conditions in mid-aged women and beyond: the role of reproductive health over the life course and medication use
PhD Candidate:	Xiaolin Xu, The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Mark Jones - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Multi-morbidity is a growing issue and poses a major challenge to health care systems around the world. A number of gaps in multi-morbidity research need to be addressed. This study aims to investigate the progression of chronic diseases and conditions in mid-aged women and beyond from the ALSWH (1946-51) cohort. We aim to identify factors that are associated with disease progression and outcomes. We are particularly interested in how reproductive variables (e.g., age at menarche/menopause and number of children) influence the progression and outcomes as well as medication use and cost in this progression.

#### Research outcomes:

##### *Publications*

- Progression of diabetes, heart disease, and stroke multimorbidity in middle-aged women: a 20-year cohort study. Xu X, Mishra G, Dobson A, Jones M. *PLOS Medicine*, 2018.

##### *Conferences, seminars and workshops:*

- Longitudinal progression of cardiometabolic multimorbidity in mid-aged women: A 20-year cohort study. Xu X, Mishra GD, Jones M. *2<sup>nd</sup> Queensland Cardiovascular Research Showcase (Heart Foundation)*. Brisbane, QLD, 23 November 2017.

Project: A649	Micronutrient adequacy and risk of gestational diabetes
Masters student:	Moniek Looman, Wageningen University
Collaborators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Danielle Schoenaker – Cancer Council Victoria</li> <li>• Dr Sabita Soedamah-Muthu - Department of Medical and Clinical Psychology, Tilburg University</li> <li>• Prof Edith Feskens - Wageningen University</li> </ul>

	<ul style="list-style-type: none"> <li>Anouk Geelen - Wageningen University</li> </ul>
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Gestational diabetes is one of the most common pregnancy complications. It increases risk of adverse pregnancy outcomes and health outcomes for both mothers and their offspring. Previous findings indicated that women with a healthier diet had a lower risk of gestational diabetes. A healthier diet is often more nutrient dense, thus providing more micronutrients such as vitamins. Adequate micronutrient intake is needed to support a healthy pregnancy. Moreover, several micronutrients affect glucose tolerance and can thus influence risk of developing gestational diabetes. This project aims to examine the association between prepregnancy micronutrient adequacy and the risk of developing gestational diabetes.

**Research outcomes:**

- Pre-pregnancy dietary micronutrient adequacy and risk of developing gestational diabetes in an Australian population-based cohort. Looman M, Schoenaker DAJM, Soedamah-Muthu SS, Mishra GD, Geelen A & Feskens EJM. *Dutch Epidemiology Congress 2018 (WEON 2018)*, Bilthoven, The Netherlands, 7-8 June 2018.

Project: A654	Investigating the association between weight status, weight change, and headache in young Australian women.
PhD candidate:	Sonja Kubik, The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>Prof Frances O’Callaghan – School of Applied Psychology, Griffith University</li> <li>Prof Paul Martin – School of Applied Psychology, Griffith University</li> <li>A/Prof Grant Devilly – School of Applied Psychology, Griffith University</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>

Pervasive evidence has emerged suggesting an association exists between primary headaches (namely migraine) and obesity. However, only a very limited number of studies are prospective in nature and/or incorporated lifestyle and psychological factors into the model when investigating the migraine-obesity association. In this research, we will use cross-sectional data to explore what (if any) lifestyle and/or psychological factors known to correlate with both conditions have the greatest impact, and create a multivariate model that will show how these factors work together to predict headache in a nationally representative population of reproductive Australian women, aged 18-23 years. We will also use prospective data to examine the association between changes in women’s weight status and self-reported headache frequency.

Project: A666	The association between diet quality and work transitions in reproductive aged women.
PhD Candidate:	Julie Martin, Monash University
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Helena Teede - Monash Centre for Health Research and Implementation, Monash University</li> <li>• A/Prof Lisa Moran - Monash Centre for Health Research and Implementation, Monash University</li> </ul>
Other collaborators:	<ul style="list-style-type: none"> <li>• Dr Anju Joham - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Sanjeeva Ranasinha - Monash Centre for Health Research and Implementation, Monash University</li> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Young women are increasingly challenged with balancing their family and work-life. The association between diet quality and women's work transitions before and after the birth of their child is poorly understood. This study will investigate diet quality as measured by the Dietary Guideline Index (DGI) using dietary data from the food frequency questionnaires completed by postpartum women who had given birth from the Young (1973-78) cohort at Survey 5. Specifically, we will investigate the association between diet quality and paid and unpaid maternity leave arrangements, duration of maternity leave, and working arrangements (full time, part time, casual) after childbirth.

Project: A673	Urinary incontinence in the 1989-95 cohort.
PhD candidate:	Tayla Shepherd, The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Dr Gregore Mielke - Pelotas Federal University</li> <li>• Dr Emma Beckman - School of Human Movement and Nutrition Studies, The University of Queensland</li> </ul>

The aim is to improve understanding of urinary incontinence (UI) in the 1989-95 cohort: prevalence, predictors and outcomes. Given their higher BMI and levels of physical activity, we are interested in the prevalence of UI in this cohort and its determinants in comparison with those already studied in the 1973-78 cohort.

Project: A675	Patterns of opioid use by older women in their last year of life
PhD candidate:	Chris Harrington, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Julie Byles – Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Peter Saul - Palliative Care, Newcastle Private Hospital</li> <li>• Dr Daniel Barker - The University of Newcastle</li> <li>• Dr Charles Douglas - School of Medicine and Public Health, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>

This data analysis will examine the frequency and sequence of medical interventions performed on people with advanced life-limiting disease. It will quantify the cumulative interventions performed on women with advanced disease, in the community, in private day-only hospitals or inpatient unplanned admissions. This will form the backdrop for comparing the trajectory of interventions and symptom relief via strong opioids after a woman has been admitted to hospital after an emergency department presentation. At what point is there an increase or decrease in disease modifying interventions as illness progresses, and is this related to a change of management of pain. In particular, how does an emergency admission to hospital due to illness exacerbation affect health service pathways (which professionals, which settings, what interventions and what pain and breathlessness medication usage).

Project: A677	Health care utilisation and health economics of diabetes among Australian women
PhD candidate:	Befikadu Wubishet, The University of Newcastle
Supervisors/collaborators:	<ul style="list-style-type: none"> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Melissa Harris - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> <li>• Dr Shamasunder Acharya - General Medicine / Endocrinology, John Hunter Hospital</li> <li>• Danielle Lang - School of Medicine and Public Health, The University of Newcastle</li> </ul>
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Diabetes is one of the primary chronic conditions contributing to morbidity, mortality and economic burden in Australia. More accurate information on health care utilization patterns and associated costs in the whole spectrum of the diabetic population as well as specific groups such as patients at their end of life is important for future planning of healthcare services, particularly as diabetes incidence continues to rise. In addition, information on clinical practice-based cost effectiveness of antidiabetic medications aids decision-making and resource use optimization for diabetes patients. The project, primarily, aims to assess health care utilization of women with and without diabetes and the incremental costs incurred by the government and patients (out-of-pocket) due to diabetes and its complications. ALSWH self-reported data will be linked to administrative databases (Medicare Benefits Scheme, Pharmaceutical Benefits Schedule, hospital data and national death index).

Project: A685	Using epidemiological evidence to aid tailored joint decision making in areas of Clinical uncertainty in the management of cardiovascular diseases (CVD) in later life.
PhD Candidate:	Dr Shazia Abbas, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Kichu Nair - School of Medicine and Public Health, The University of Newcastle</li> <li>• Dr Tazeen Majeed - Research Centre for Gender, Health and Ageing, University of Newcastle</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Peta Forder - School of Medicine &amp; Public Health, The University of Newcastle</li> </ul>

The project aims to develop a decision making tool to quantitatively assess the probabilities of all outcomes associated with atrial fibrillation; integrating patient profile and patient preferences for each outcome to help clinicians and patients make informed decisions in choosing the anticoagulant regimens/treatment to the balance the risk of stroke, bleeding and death in patients with atrial fibrillation.

**Research outcomes:**

- Preliminary findings from Study 1 of the project were presented at the *Emerging Researchers in Ageing (ERA) conference*, Perth, Western Australia, November 2017.
- Presentation at the University of Newcastle Research Centre for Generational Health and Ageing Expo, Newcastle, November 2017.
- Finalist, 3 Minute Thesis (3MT) competition, University of Newcastle Faculty of Medicine and Health, July 2018. (University of Newcastle final is scheduled for August 24, 2018).

Project: A687	Investigating the association between depressive symptoms and hypertension in the young ALSWH cohort.
Student:	Regina Prigge, The University of Edinburgh
Other collaborators:	<ul style="list-style-type: none"> <li>• Dr Caroline Jackson - School of Molecular, Genetic and Population Health Sciences, The University of Edinburgh</li> <li>• Prof Sarah Wild - The University of Edinburgh</li> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Depression might lead to an increased risk of hypertension. However, findings of published studies are conflicting and many have methodological limitations. We aim to investigate the association between time- varying depressive symptoms and hypertension among the young ALSWH cohort, to assess whether the association varies by distinct depressive symptom subgroups, and to investigate factors that might mediate this increased risk. For example, a previous study using the mid- aged ALSWH cohort found that depressive symptoms were associated with increased risk of hypertension. This association markedly attenuated following adjustment for body mass index (BMI), suggesting that BMI may confound and/or mediate the association.

Project: A688	The burden of multi-morbidity in mid-age Australian women
PhD Candidate:	Jeeva Kanesarajah, The University of Queensland

Supervisors:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• Dr Michael Waller - School of Public Health, The University of Queensland</li> <li>• Prof Jenny Whitty- Norwich Medical School, University of East Anglia</li> </ul>
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Multimorbidity is defined as the presence of multiple conditions which may or may not be related. Multimorbidity is associated with lower quality of life, higher mortality, and increased health care usage and spend. In Australia, half of all Australians have a chronic condition and one in four Australians are multimorbid. Information on multimorbidity and its trajectories are important to assist in health service planning for preventive, management and treatment services. This research aims to examine the burden of multimorbidity on health care usage and expenditure, health related quality of life, and survival in mid-age Australian women.

Project: A692	Mental health and bone quality in Australian women
PhD Candidate:	Dr Abhijit Chowdhury, Centre for Clinical Epidemiology and Biostatistics, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• A/Prof Mark McEvoy - Centre for Clinical Epidemiology &amp; Biostatistics, The University of Newcastle</li> <li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li> </ul>
Additional research collaborator	<ul style="list-style-type: none"> <li>• Dr Tazeen Majeed - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

The project focuses on evaluating the impact of long- term depression and anxiety on new onset osteoporosis and low- trauma fractures among mid- aged Australian women over 15 years. People with long- term depression and anxiety have been shown to have a higher risk of osteoporosis and low- trauma fractures in epidemiological studies, but the exact association and biological interplay among these factors are long- debated and mostly underexplored. Alongside the ALSWH survey data, this project will be using linked data for better understanding of this relationship.

Project: A701	Substance use and sexual behaviors among young Australian women
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PhD Candidate:	Alemu Sufa Melka, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Dr Catherine Chojenta - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Professor Deborah Loxton - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Liz Holliday - Clinical Research Design, Information Technology and Statistical Support (CReDITSS) Unit, The University of Newcastle</li> </ul>
Additional research collaborator	<ul style="list-style-type: none"> <li>• Peta Forder - Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

The dramatic physical, psychological and emotional changes that occur during late adolescence predisposes young people to problematic substance use and risky sexual behaviors that may lead to serious short and long term health problems. Studies conducted in Britain and San Diego have shown that young people who reported binge drinking or recent illicit drug use were more likely to report non-condom use in their first experience of sexual intercourse, STIs diagnoses, abortions and high rate of unintended pregnancy (Khadr S et al., Tapert SF et al.). Thus, the current study intends to examine the pattern of substance use and the relationship between substance use and sexual behavior, including unintended pregnancy, pregnancy loss and early sexual debut, using data collected from the 1989-95 cohort of the Australian Longitudinal Study on Women's Health (ALSWH).

Project: A704	Investigating the relationship between sleep behaviour during pregnancy and adverse pregnancy related outcomes.
Student:	Christie Bennett – Monash University
Supervisors:	<ul style="list-style-type: none"> <li>• Dr Michelle Blumfield - Faculty of Medicine, Nursing &amp; Health Sciences, Monash University</li> <li>• Prof Helen Truby - Monash University</li> <li>• Dr Stella Gwini - Monash University</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>• Dr Melissa Harris – Research Centre for Generational Health and Ageing, The University of Newcastle</li> </ul>

The majority of women will experience sleep disturbances in pregnancy, even if they have never experienced adverse sleep symptoms before. In non-pregnant populations, sleep disturbances have

been linked to poorer dietary intakes, reduced glucose tolerance and a greater risk of obesity. However, research examining this relationship in pregnancy is limited. This research aims to investigate the relationship between sleeping behaviour in pregnancy and child birth outcomes (Child Data) in women with and without gestational diabetes (from Survey 5).

Project: A713	Understanding Australian women's hospital use dynamics in later life: The Australian Longitudinal Study on Women's Health.
PhD Candidate:	Dinberu Shebeshi, The University of Newcastle
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Julie Byles - Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Dr Xenia Dolja-Gore - Research Centre for Generational Health and Ageing, The University of Newcastle</li> <li>• Prof Jimmy T Efird - The University of Newcastle</li> </ul>

The project aims to characterise multiple hospital admission patterns among older Australian women. While frequent hospital admissions over time are very common in older patients, most studies have identified trends in hospitalisation, time to first hospitalisation, or factors associated with first hospitalisation. This ignores the existence of subsequent hospitalisation and correlations between different admissions. Our study will examine multiple events including factors associated with each event, and the relationship between events. The study will also provide evidences regarding older women hospital use for policy makers.

Project: A714	Lifestyle behaviours in cancer survivors: measuring the teachable moment of cancer diagnosis.
PhD Candidate:	Daniel Tollosa, The University of Newcastle
Supervisors/collaborators:	<ul style="list-style-type: none"> <li>• Dr Meredith Tavener - Research Centre for Generational Health and Ageing, Health and Ageing, University of Newcastle</li> <li>• A/Prof Erica James - School of Medicine and Public Health, The Univesity of Newcastle</li> <li>• Dr Alexis Hure - School of Medicine and Public Health, The University of Newcastle</li> </ul>

	<ul style="list-style-type: none"> <li>• Mark Jones - Clinical Research Design, IT and Statistical Support (CReDTSS), Hunter Medical Research Institute (HMRI)</li> </ul>
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Given advances in early detection, treatment, and survivorship care, the number of cancer survivors has been steadily increasing over the past few decades. However, recurrence and co- morbidities are still a major concern for cancer survivors. Lifestyle factors such as healthy diet, physical activity and maintaining a healthy weight can reduce cancer- related consequences and improve overall survival in the aftermath of a cancer diagnosis. It has also been suggested that the diagnosis of cancer may provide a “teachable moment” when survivors may be more receptive to health recommendations and more likely to make lifestyle changes. However, despite the existence of lifestyle recommendations, and the potential for a teachable moment, the lifestyle behaviours of cancer survivors remain similar to those without a cancer history. The aim of this series of studies is, therefore: i) to examine the practice of multiple health behaviours, ii) to assess if there is evidence of a teachable moment where cancer survivors improve compliance with lifestyle recommendations following a cancer diagnosis (compared to age- matched controls), and iii) to assess if any change in behaviours are maintained over time.

Project: A725	How are the sociodemographic characteristics of young Australian adult women associated with differences in the nutritional quality of their dietary intake?
Masters student:	Gina O’Grady – The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• David Fitzgerald - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>
ALSWH liaison:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Research has shown that the sociodemographic characteristics of individuals are associated with their dietary intake however what remains unclear is the extent to which human nutrition, and more specifically macronutrient/micronutrient intake, is associated with these sociodemographic characteristics. In analysing data from the fourth survey of the 1989-95 cohort of the Australian Longitudinal Study on Women’s Health, which included the MyFood24 tool, this project will estimate the strength of associations between sociodemographic characteristics of women and their nutritional intake. This information will provide a valuable resource for the formulation of prevention strategies and education to target at risk groups with the goal to reduce illness brought about by poor nutrition.

Project: A728	Understanding the relationships between weight gain, physical activity and indicators of women's reproductive health.
Student:	Gabriela Mena, The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Wendy Brown - School of Human Movement and Nutrition Sciences, The University of Queensland</li> <li>• Dr Gregore Mielke - Pelotas Federal University</li> </ul>

The purpose of this research is to better understand the relationships between weight gain, physical activity and aspects of young women's reproductive health, with a focus on the potential effects of physical activity and menstrual irregularities on weight-reproductive health relationships. We will examine relationships between weight gain and indicators of reproductive health in young women (ability to have children, use of in vitro fertilisation (IVF), use of fertility hormones, PCOS, endometriosis etc). As women gain weight, they may develop menstrual irregularities that are precursors to infertility. However, physical activity may modify the relationship between weight gain and these health outcomes. The results will inform the development of practices which may help to establish better reproductive health in young women.

Project: A732	Mapping the K10 to the SF-36 in young Australian women and investigating intra- and inter-cohort trends
Masters student:	Jacob Egwunye – The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> <li>• David Fitzgerald - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

This project will explore the level of agreement between the K10 and the SF-36 within a cohort of young Australian women and construct a mapping algorithm to calibrate them. The project will also investigate trends in the prevalence of mental illness: both within a single birth cohort and between generations of birth cohorts of Australia women.

## 13.2 Completed student projects

Project: A544	The prevalence and characteristics of young and middle aged Australian women who use of Chinese Medicine (CM).
PhD Candidate	Lu Yang (University Technology Sydney)
Supervisors	<ul style="list-style-type: none"> <li>• Prof Jon Adams - School of Public Health, University Technology Sydney</li> <li>• Professor David Sibbritt - Faculty of Health, University Technology Sydney</li> </ul>
ALSWH Liaison	<ul style="list-style-type: none"> <li>• Prof Jayne Lucke - Australian Research Centre in Sex, Health &amp; Society (ARCSHS), La Trobe University</li> </ul>

Traditional Chinese Medicine (TCM) is a broad range of medicine practices sharing common concepts which have been developed in China and are based on a tradition of more than 2000 years, including various forms of herbal medicine, acupuncture, massage, exercise, and dietary therapy. In recent decades, the use of TCM has become increasingly popular in Western societies. However, there is a lack of detailed empirical investigation of TCM use amongst women in Australia and this thesis provides an initial direct response to this research gap and need.

### Research outcomes:

#### *Publications:*

- Yang L, Adams J & Sibbritt D. (2017). Prevalence and factors associated with the use of acupuncture and Chinese medicine: Results of a nationally representative survey of 17,161 Australian women. *Acupuncture in Medicine*, 35 (3); 189-199.

#### *Conferences, seminars and workshops:*

- Yang L, Sibbritt D & Adams J. *Traditional Chinese medicine use amongst people with arthritis: Reports from nationally representative sample of Australian women* (poster presentation). The 10th European Society of Integrative Medicine & 12th International Society for Complementary Medicine Research Congress, Berlin, Germany (12 May 2017).

Project: A650	Glycaemic index, glycaemic load, and carbohydrate intake and risk of gestational diabetes
Masters student:	Moniek Looman, Wageningen University
Collaborators:	<ul style="list-style-type: none"> <li>• Prof Gita Mishra – Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

	<ul style="list-style-type: none"> <li>• Dr Danielle Schoenaker – Cancer Council Victoria</li> <li>• Dr Sabita Soedamah-Muthu - Department of Medical and Clinical Psychology, Tilburg University</li> <li>• Prof Edith Feskens - Wageningen University</li> <li>• Anouk Geelen - Wageningen University</li> </ul>
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Gestational diabetes is one of the most common pregnancy complications. It increases risk of adverse pregnancy and health outcomes for both mothers and their offspring. Carbohydrate restriction and evenly spreading of carbohydrate intake throughout the day helps women with GDM to control their blood glucose levels. Also carbohydrate intake and glycaemic load of the prepregnancy diet may influence risk of developing GDM according to one US study. However, whether this is also the case for other populations is not known. This project examined the associations between glycaemic index, glycaemic load, and carbohydrate content of the prepregnancy diet and the risk of developing gestational diabetes in an Australian population.

- Pre-pregnancy dietary, lifestyle and reproductive risk factors of gestational diabetes in an Australian population-based cohort. Looman M, Schoenaker DAJM, Soedamah-Muthu SS, Feskens EJM, Geelen A & Mishra GD. *The 10<sup>th</sup> World Congress on Developmental Origin of Health and Disease (DOHaD 2017)*, Rotterdam, The Netherlands, 14-18 October 2017.

Project: A703	The association between body-mass index and mortality in women, focusing on underweight and low-normal women
Masters student:	Alison Griffin – The University of Queensland
Supervisors:	<ul style="list-style-type: none"> <li>• Prof Annette Dobson - Centre for Longitudinal and Life Course Research, The University of Queensland</li> </ul>

Many studies have found that older people who are underweight (BMI less than 18.5) have a higher mortality rate (i.e., die at a higher rate) than those with healthy or overweight BMI. The underweight are more likely to be smokers and have poor health, but while controlling for these factors reduces the size of the association between BMI and mortality, it does not eliminate it. This project investigated the association between BMI and mortality in women, described the characteristics of underweight women, and investigated additional factors contributing to mortality in the underweight.

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