

Australian Longitudinal  
Study on Women's Health

## Abstracts

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## *Reaping the Benefits*

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# Abstracts

*The dietary intakes of pregnant women assessed using image-based dietary records.* **Amy Ashman (On behalf of Megan Rollo)**

**Background:** Prospective collection of dietary intake data using traditional methods, such as weighed food records, is commonly associated with high participant burden and changes in usual intake. Image-based dietary records aim to simplify the recording process by using digital photographs to document what is consumed at each eating occasion. This study used 3-day image-based dietary records, collected via smartphone, to assess intakes of food groups and key nutrients in pregnant women.

**Methods:** Pregnant women collected a three-day image-based dietary record using their own smartphone. Two dietitians independently performed the analysis of the records using a brief tool that was developed specifically for use with the image-based dietary records. Food group and selected nutrient intakes were compared to national nutrition guidelines.

**Results:** Twenty-three pregnant women (aged 30±6 years; gestation 6-24 weeks; 13 used supplements) participated. Sixteen women used an Apple iPhone, while the remaining seven used an Android smartphone (e.g. Samsung Galaxy). Compared to guidelines, mean (SD) daily food group intakes were below recommendations for grains and cereals (5.0±1.9 serves), vegetables (2.4±1.4 serves), and lean meats and/or alternatives (2.1±1.0 serves). Participants were close to meeting recommendations for dairy and/or alternatives (2.2±1.3 serves), and met recommendations for fruit (2.0±1.6 serves) and unsaturated spreads and oils (1.9±1.4 serves). Intakes of discretionary (energy-dense, nutrient-poor foods) exceeded recommendations (3.7±2.0 serves/day). The proportion of women with inadequate micro-nutrient intakes (i.e. below Estimated Average Requirements) was greatest for iron (78%, n=18), followed by calcium (48%, n=11), folate (43%, n=10), iodine (35%, n=8), and zinc (9%, n=2).

**Conclusion:** Dietary intakes of pregnant women were sub-optimal for most food groups and key nutrients. Evaluation of the use of image-based dietary records is continuing in the population group and will include comparison to other dietary assessment methods and evaluation of use acceptability.

*Cancer risk and cancer diagnosis among Australian women of diverse sexuality.* **Rhonda Brown**

There is limited research of cancer and related risk factors among Australian same sex attracted women. Although data about the prevalence and incidence of cancer is routinely collected no such data is collected about sexual minority women (SMW). This paper reports findings from a study that examined the potential relationships between sexual identity, cancer, and cancer risk factors among a sample of Australian women. We have conducted secondary data analysis of the Australian Longitudinal Study of Women's Health (ALSWH) of women born in 1946-1951 (n=10, 451) across three time waves. Of the sample 10,200 women identified as exclusively heterosexual and 251 as mostly heterosexual, bisexual, mostly lesbian or lesbian (SMW), 64-69 when last surveyed. We found sexual minority women to have higher rates of several know cancer risk factors including significantly higher rates of hazardous consumption of alcohol, tobacco use, physical abuse and they were more likely to have never had a mammogram or Pap smear. While cancer rates increased as women aged, we found no difference between exclusively heterosexual and sexual minority women. It is important to continue to collect data on cancer among same sex minority women as higher rates of cancer related risk factors may place SMW at higher risk of cancer as these women age as well as other chronic health conditions. In this paper I will discuss the implications for the health outcomes and the need for greater attention to the health of same sex attracted women in mainstream health research and clinical practice.

*Diabetes is associated with poor mental health and wellbeing in mid and older aged Australian women: a longitudinal study.* **Oliver Butt**

**Objectives:** Australians with diabetes have a higher prevalence of poor mental health and wellbeing than those without diabetes. Interestingly, a decline in mental health is more prevalent in women than in men. No large population-based studies have evaluated the relationship between diabetes and mental health decline in Australian women. Therefore, in the present study we investigated whether there is an association between diabetes and mental health status in mid-and older aged Australian women over a 6 year period. **Methods:** From the ALSWH longitudinal survey of mid (45-50 years) and older aged (70-75 years) women (total participants 14,997), we identified at survey 1 (S1) those with diabetes: mid aged women with diabetes n=261 and older aged women with diabetes n= 395. After which, their self-reported mental health status in the subsequent 6 years was followed. We also analysed the Short Form questionnaire 36 (SF36). The main outcome variable of this study is mental health. **Results:** We analysed 8 dimensions of SF-36, which included 4 physical components and 4 mental components. Physical components included physical function, role physical, bodily pain and general health. Mental components included mental health, role emotional, social function and vitality. Both mental component and physical component scores were self-rated as worse for women living with diabetes over a period of 6 years compared to age-matched healthy women. The physical component score showed a significant decline over 6 years (P<0.001), whereas the mental component score showed a smaller but statistically significant (P = 0.031) decline over this period. Importantly, the mental health component score remained significantly lower in women with diabetes after adjustment for age, bodily pain, role emotional and mental health (P < 0.05). **Conclusion:** The present study is the first to show longitudinal changes in mental

health were more marked in Australian women with diabetes than in those without.

*Inappropriate placement in hospital: An analysis of 4087 women aged 75+.* **Catherine Chojenta**

**Background** With a rapidly ageing population, it is imperative to examine health service costs and appropriately plan for the future. Acute hospital stays account for the greatest health care costs, and older people are the highest users of acute care. "Bed blocking" occurs when patients are medically fit for discharge but a suitable transfer position (such as in residential aged care or rehabilitation) is not available. This paper determines the factors related to inappropriate placement in hospital for older women in order to provide valuable information to reduce burden on hospitals. **Methods** Participants were from the 1921-26 cohort of the Australian Longitudinal Study on Women's Health, who were aged 70-75 when first recruited in 1996. Participants have been completing self-report surveys on a three-yearly basis on a range of health and lifestyle issues. For this analysis, data was linked to the New South Wales Admitted Patient Data Collection and the National Death Index to ascertain deaths. **Results** Of the 4086 participants who resided in New South Wales, 87% had a hospitalisation in the observation period. In the multivariate model, living in a regional or remote area was the only variable positively associated with having an inappropriate hospitalisation (AOR=1.55 (1.33, 1.82)). **Conclusions** Area of residence is the determining factor for experiencing an inappropriate hospitalisation. An increase in non-acute care options is required in rural and remote areas to reduce bed blocking in acute hospitals.

*The impact of poor mental health on health care costs in the perinatal period.* **Catherine Chojenta**

The Australian Institute of Health and Welfare estimates that the total expenditure on health was \$154.6 billion in 2013–14 and that \$2.5 billion was spent on maternal conditions. The majority of these costs comprise of hospitalisation costs around the time of delivery. Results from our previous analyses indicate that certain factors influence the use of health services in the perinatal period. For hospital costs, private and public hospital models differed as did mode of delivery. For Medicare costs, mode of delivery was also important, as was poor perinatal mental health. Importantly, women who indicated they had experienced postnatal depression had significantly higher Medicare costs in the perinatal period. What is not known is whether a history of poor mental health has an ongoing impact on health care costs in the perinatal period. Therefore the aim of this project was to examine more closely the relationship between poor mental health and health service use in the perinatal period. This project will answer the following research questions: Do women with a history of poor mental health have higher health care costs in the perinatal period? And do these costs differ for the public and private health care systems? This project will utilise data collected via the Australian Longitudinal Study on Women's Health linked with several administrative datasets including Medicare, the Pharmaceuticals Benefits Scheme, the NSW Perinatal Data Collection and the NSW Admitted Patient Data Collection, so that a comprehensive set of health care factors can be examined. These results will have important implications for health policy and planning.

*Vasomotor symptoms are associated with psychological symptoms of depression: results from a pooled analysis.* **Hsin-Fang Chung**

**Objectives:** Vasomotor symptoms (VMS) are suggested to be associated with depressive symptoms, but much of the evidence for the link comes from individual studies with a small sample. We investigated the association between VMS and depressive symptoms using pooled data from the International collaboration for a Life course Approach to reproductive health and Chronic disease Events (InterLACE) study. **Methods:** We selected 14,410 women around age 50 years from ALSWH and 1958 British Birth Cohort contributing to the InterLACE. Women were asked have they had experienced VMS (hot flushes and night sweats) and depressive symptoms over the previous 12 months, and the symptoms were categorised as never, rarely, sometimes, and often. Generalised linear mixed models with random effect were used to estimate relative risks (RR) and their 95% confidence intervals (95% CI) for the associations between VMS and risk of depressive symptoms adjusting for menopausal status, sociodemographic, and lifestyle factors. **Results:** Prevalence of depressive symptoms (sometimes and often combined) was 31.5%. In the multivariate model, the RRs for depressive symptoms associated with rarely, sometimes, and often hot flush symptoms were 1.06 (95%CI 0.89-1.25), 1.31 (95%CI 1.13-1.52), and 1.53 (95%CI 1.50-1.56), respectively when compared with never symptoms. There was an interaction between hot flushes and menopausal status ( $p < 0.0001$ ), thus we further stratified analyses by menopausal status. The risk of depressive symptoms was amplified for pre-menopausal women (RR:1.25 95%CI:1.08-1.44; RR:1.51 95%CI 1.17-1.95; RR 2.24 95%CI 1.98-2.55 for rarely, sometimes, and often hot flushes, respectively when compared with never symptoms). Similar associations were observed between night sweats and risk of depressive symptoms. **Conclusion:** This pooled analysis provides robust evidence for a dose-dependent association between VMS and depressive symptoms, and the risk was amplified for pre-menopausal women. Strategies need to be developed to improve mental health for middle-aged women, especially those in pre-menopause.

*Breastfeeding duration after Childhood Sexual Abuse: Results from ALSWH 1973-78 Cohort.* **Jan Coles**

Background: Childhood sexual abuse (CSA) is prevalent across the world. CSA is associated with poorer health but information on its impact on breastfeeding is limited. This study investigated the link between CSA and duration of breastfeeding for six months or more. Objective: The purpose of this study was to determine the association between CSA and breastfeeding duration for Australian women. Methods: Data from 3778 women from the 1973-78 cohort of the Australian Longitudinal Study on Women's Health were used. A stepped approach was used to assess the association between CSA and breastfeeding the first child for six months or more with logistic regression modelling, adjusting for significant socio-demographics, health behaviors and adult violence. Results: The 15.5% of women who had experienced CSA were less educated, younger, more likely to be smokers and have experienced adult violence. The CSA group was less likely to breastfeed for six months or more (OR=0.78, 95%CI=0.65-0.93), even after adjusting for smoking (OR=0.81, 95%CI=0.68-0.98) and adult violence (OR=0.80, 95%CI=0.67-0.96). There was no longer a significant association once socio-demographic factors were adjusted for, which remained true in the fully adjusted model (OR=0.90, 95%CI=0.75-1.09). Conclusion: Women who experienced CSA were successfully able to maintain breastfeeding at a level similar to those who had not experienced CSA after controlling for socio-demographics. Further testing of whether the effects of CSA are mediated through social variables is warranted to investigate whether addressing social factors in service provision may be key to improving breastfeeding duration.

*Prospective change in diet quality in relation to weight change in mid-age Australian women over nine years of follow-up.* **Clare Collins**

Objective: To examine whether change in diet quality is associated with prospective nine year weight change in mid-aged women from the Australian Longitudinal Study on Women's Health (ALSWH). Design: Diet quality was measured using the Australian Recommended Food Score (ARFS) with data generated from a validated food frequency questionnaire (FFQ). The ARFS contains seven subscales including vegetables, fruit, dairy, wholegrains, meat and other protein sources, with the total score ranging from zero to 74. Setting: Eligibility included no serious medical conditions at baseline and they had a valid total Energy Intake (TEI) determined with the Goldberg cut-point method. Multivariate linear regression was used to evaluate the relationship between change in diet quality and change in weight over time. Subjects: A total of 2,381 women were included. Results: Participants were categorised into tertiles of ARFS score change. Those in the top tertile improved their score, mean (SD) 7±4 points. Those in the lowest and mid tertiles had worse ARFS scores (-9 ±5 and -1±2 points respectively). Over nine years the women on average gained 2.3±7.2kg and had a decline in diet quality of 2±8 points. Only those in the top ARFS change tertile reported significantly lower weight gain [-1.2 kg (95% CI -2.31, -0.11), p=0.03]. Conclusion: Targeting improvements in diet quality of mid-age women may be an important strategy to reduce weight gain that is common at this life stage. Further research examining strategies to optimise diet quality in mid-age women is warranted.

*Apps and opps: mobile applications and opportunities for longitudinal data collection across the reproductive lifespan.* **Lisa McArthur Daly**

Objectives: Mobile health modalities offer the potential to reach, teach, connect, motivate and empower individuals to address specific health concerns. This presentation offers a descriptive review of how mobile applications ("apps") available to women during their reproductive years may also serve as a rich source of longitudinal data, with their focus on a continuum of age and health experiences. Methods: An exploratory review was performed to investigate how mobile applications for women of childbearing age offer a platform for longitudinal data collection. A literature review was also conducted to link mobile app usage to perinatal health outcomes. A selection of the most popular preconception, pregnancy and parenting apps used by Australian women are analysed in more detail. Results: Over 40,000 medical apps are available in the global health marketplace, with more apps for pregnancy than any other medical topic. Over 90% of Australian women aged 18-34 years downloaded an app on a mobile phone in the past year, and millions of women in Australia use mobile apps to access, store and share personal health information. App developers are increasingly designing products to retain users across the reproductive lifespan, offering resources to track menstruation, fertility, pregnancy and child development. Many apps link to social media sites, online communities, and commerce. A plethora of data is captured, which users can access, manipulate, organise and share for health and lifestyle planning. However, little peer-reviewed literature exists to demonstrate associations between mobile app usage and health outcomes. Conclusions: This study explores longitudinal data collection opportunities using mobile apps and social media. Relationships between researchers, industry, government and healthcare agencies could afford new avenues for data collection, survey distribution, sharing of quality health information, and linkages to community health programs and clinicians. Potential issues exist alongside benefits and must be carefully navigated to ensure quality, access and confidentiality.

*Women's use of alcohol during the transitional years from mid-life to early retirement.* **Julie Dare**

**Objectives:** This research, which is part of an international collaboration with Aalborg University (Denmark), investigated how social and cultural norms influence Australian women's alcohol use from mid-life to retirement (50-70 years). These years represent a transitional period in many women's lives, as roles and responsibilities often change significantly. Alcohol may become a normal way of dealing with everyday stressors associated with these transitions, while research has also identified that as woman age, drinking patterns may move from episodic to part of everyday life. **Methods:** Qualitative interviews were conducted in Perth from December 2015 to February 2016, with 30 women (50-70 years) who had at least 1 standard drink of alcohol in the past month. Interviews explored the relationship between alcohol consumption, social context, and transitions women experience from mid-life to early retirement. Interviews were audio recorded and transcribed, transcripts were member checked to enhance credibility, and constant comparative data analysis used to identify key themes. **Results:** Many participants associated their alcohol use with socialisation and relaxation, and attributed increased alcohol use to more free time and increased opportunities to socialise once children were 'off their hands'. A few women suggested their alcohol use had decreased due to health concerns. Retirement was idiosyncratically associated with increased and reduced alcohol use. **Conclusion:** As women move through mid-life to retirement, many experience increased opportunities to socialise, as well as more leisure time following retirement. This research suggests such transitions influence women's alcohol use, with their drinking closely associated with socialisation and relaxation. Conversely, for some women, transitions such as retirement mean freedom from work-related stressors, and decreased stress-related drinking. This highlights the close links between transitions in women's lives and their alcohol use, and provides important insights to inform public health strategies aimed at minimised alcohol-related harm in this population group.

*Three subgroups of pain phenotypes in 227 older, community-dwelling women with arthritis: a cross-sectional study.* **Katie de Luca**

**Objectives:** The multi-dimensional nature of pain includes sensory, affective and cognitive characteristics of pain. No study has looked at sub-grouping women with arthritis, based on the dimensions of the pain experience. The aim is to identify distinct groups of women with arthritis, based on the multi-dimensional nature of their pain. **Methods:** A cross-sectional study of 700 women from the Australian Longitudinal Study on Women's Health. Women were sent a postal survey asking about their health, pain and arthritis. Pain dimensions included intensity, severity and duration, sensory and affective quality, type of pain and pain catastrophizing. Statistical analyses included latent class cluster analysis and comparison between clusters using multi-variate multinomial logistic regression. **Results:** 579 (82.7%) women returned surveys and 227 had arthritis. A three-class cluster model was most parsimonious. Cluster 1 had 95 women (40%) with mild uni-dimensional pain profile, Cluster 2 had 83 women (38%) with moderate multi-dimensional pain profile and Cluster 3 had 49 women (22%) with severe multi-dimensional pain profile. Compared to women in cluster one, women in cluster two have significantly worse QoL and fatigue. Compared to women in cluster one, women in cluster three have significantly worse QoL, depression, unemployment, being overweight/obese and fatigue. **Conclusions:** Three clusters of women based upon dimensions of pain were identified. 40% had mild pain; 38% had moderate pain and poor sensory/affective qualities of pain; and 22% had severe pain with sensory and affective abnormalities, neuropathic pain and pain catastrophizing. Women in clusters two and three were at significantly higher risk of poorer quality of life and health compared to women in cluster one. Women with arthritis have different experiences of pain, noticeably nearly ¼ present with severe pain, sensory abnormalities, neuropathic pain and pain catastrophizing. This is characteristic of chronic, non-nociceptive pain of a central origin.

*Data management in the ALSWH – managing complex and large longitudinal health data.* **David Fitzgerald**

The ALSWH has continually produced large data since 1996 and the required data management is complex and multi-faceted. This presentation will give an overview of the many data management challenges involved in the ALSWH and the steps we have taken to overcome these challenges in longitudinal studies such as ALSWH. The ALSWH responses, from either online or paper questionnaires, need to be transformed by the data management process into analysable data sets that can be delivered and understood by researchers. The self-reported responses are edited if appropriate to account for irregular responses, such as missed responses, contradictory answers, and also de-identification. The self-reported data go through a series of derivations and transformations to produce standardised variables and scales used in research, such as the SF-36 for quality of life measures, from ALSWH questionnaires which must be accurately derived. The data require names and labels which are important for accuracy, ease of use, and consistency, and this is particularly important in longitudinal surveys where analysis can be varied. This longitudinal survey has grown in size and complexity which has its own challenges. Secure storage and non-identification of respondents are vital considerations. The data must also be delivered and communicated to researchers securely and with clear documentation. Consenting respondents have had their survey data linked with national and state-based collections, such as the Medicare and hospital admissions data. This requires an extra level of confidentiality and complexity to the data. This talk will be a summary of the many data management aspects in the study.

*Bullying and Violence in young Australian women (born 1989-1995).* **Peta Forder**

*Weight gain, overweight and obesity: A review of the determinants and health outcomes from the 1973-78 cohort of the Australian Longitudinal Study on Women's Health.* **Sjaan Gomersall**

**Objectives:** To describe changes in weight and weight status over time in the three ALSWH cohorts, and to review and summarise the published findings relating to the determinants and health consequences of weight gain, overweight and obesity. **Methods:** Average weight (kg), body mass index (BMI; kg/m<sup>2</sup>) and annual weight change (g/year) were calculated for the 1973-78, 1946-51 and 1921-26 cohorts for surveys 1-6. Published studies of the determinants of weight and weight change, and their health consequences were identified through an electronic search of the ALSWH internal database. **Results:** In the 1973-78 and 1946-51 cohorts, the overall trend over 14-16 years was for women to gain weight. The greatest weight gain was seen among women in the 1973-78 cohort; at survey 1 (age 18-23), their average weight was 62.5 (standard deviation 12.7) kg and by survey 6 (age 34-39), this had increased to 72.6 (17.9) kg. In the 1946-51 cohort, women showed a similar trend but at a lower rate; weighing on average 68.7 (14.2) kg at survey 1 (age 45-50) and 73.2 (15.4) kg at survey 6 (age 59-64). In the 1921-26 cohort, the trend was for a decrease in weight. At survey 1, average weight was 65.9 (11.8) kg (age 70-75). By survey 6, average weight was 62.8 (13.5) kg (85-90 years) reflecting a gradual decline between surveys. The search of published ALSWH papers found 29 studies that described the determinants and health outcomes of weight and weight gain. Determinants included energy balance variables, as well as sociodemographic and psychological factors. Health outcomes were varied and included cardiovascular disease, polycystic ovary syndrome, foot pain and asthma. **Conclusions:** Understanding the determinants and health consequences of weight gain is critically important as this information can be used for developing prevention and management strategies for this priority area of research.

*A look at the consistent reporting of Intimate Partner Violence in young Australian women.* **Carl Holder**

**Background:** It had been observed that a large number of young women who previously reported their Intimate Partner Violence (IPV), when asked again choose not to report the abuse. **Objective:** This paper seeks to analyse the reason for this phenomena. What influences some women to consistently report their IPV and others to choose not to consistently disclose it? **Methods:** This study is based on data from the second wave of IPV responses (n=3767) of the 1989-1995 cohort of the Australian Longitudinal Study on Women's Health (ALSWH), who had reported IPV at the first wave. At wave one these women were 19-24 years old and at the second wave they were one year older. Women were grouped according to their report of IPV as having reported: Emotional, Physical, Harassing or Sexual abuse. A Poisson log regression model with robust variance was used to study the associations of sociodemographic factors, psychological factors and self-reported violent partner history with consistent reporting among the different IPV abuse groups. **Results:** Emotional abuse was the most consistently reported at 73.5% reported at both waves and sexual abuse was the least consistent with 62.5% reporting while harassment and physical abuse fell in between at 63.4% and 69.7%, respectively. Factors significantly associated with consistent IPV disclosure were relationship status, self-reported violent relationship history and psychological variables. **Conclusions:** Young women who were in some form of relationship (in a relationship, living with a partner, engaged or married) were less likely to consistently report their IPV when compared to single women. Women who experienced psychologically distress were more likely to report their abuse. Sociodemographic factors such as education and ability to manage on income, do not appear to impact consistency of IPV reporting. **Keywords:** IPV, consistent reporting, young women, ALSWH, longitudinal survey, Poisson log regression model with robust variance.

*Understanding the Long-term Impact of Stroke in Older Australian Women.* **Isobel Hubbard**

**Objectives:** As populations age, an increasing number of older women are living with stroke. Although many survive stroke, little is known about their: 1. Long-term survival: associations with comorbidities and lifestyle factors 2. Disability: comparing mortality rates with physical function 3. Lived experiences of stroke **Methods:** Data from the Australian Longitudinal Study on Women's Health (ALSWH) for women born between 1921 and 1926 were used to: 1. Compare 12-year survival rates in women with prevalent stroke, incident stroke, and no stroke. Cox regression models were fitted to assess effect of lifestyle and demographic characteristics on the relationship between stroke and all-cause mortality. 2. Investigate 15 years of data to assess physical function for long-term stroke survivors. 3. Inductive thematic analysis examined qualitative experiences in women who experienced stroke in the previous three years. **Results:** 1. At baseline, 4% of women reported past (prevalent) stroke. A further 3% reported incident stroke between 1996 and 1999. Stroke was significantly associated with reduced long-term survival. Age-adjusted hazards ratios were: 1.64 (1.43-1.89) for the "prevalent stroke" group and 2.29 (1.97-2.66) for the "incident stroke" group. Adjusting for comorbidities reduced the HRs, but risk of death still significantly higher in stroke groups, and for demographic/lifestyle factors did not impact relationship between stroke and survival. 2. Almost half of women with stroke and poor physical function survived past 10 years. In women with stroke, 10-year mortality rate was 37% with adequate physical function, and 51% with poor physical function. 3. Older Australian women wrote about living with comorbidities and health and wellbeing. **Conclusions:** Stroke significantly impacts the lives and long-term survival of older women. Although it reduces their life expectancy, many live for more than 10 years, often with poor physical functioning. This has important implications for women's quality of life and healthcare during later years.

**Aims and objectives:** The aim of the study was to explore the qualitative comments provided by older women in the Australian Longitudinal Study on Women's Health (ALSWH) on their experience of pain. **Background:** Prior research shows that pain is a major concern for older people who live in the community. Those over 65 years the prevalence rates have been reported 50% while those 85 years and older 70%. Unrelieved and burdensome pain impacts on functionality and wellbeing. **Design:** Qualitative Descriptive Methods. The written comments from several surveys of the 70-75 year cohort were analysed. Two approaches were used. Firstly, deductive content analysis was used to identify references to pain and pain related words. Search terms were agreed upon by the researchers, and the associated and relevant and related comments were then identified, highlighted and extracted. Inductive content analysis then occurred where selected statements from the data were coded, categorised and organised into themes by consensus. **Results:** The findings from this study describe some of the pain concerns expressed by community living older women who responded to five ALSWH surveys. Pain was expressed in a number of ways by the women: the nature, extent, intensity, and often the causes or source of pain experienced. The main themes that emerged from the data include; the language of pain, the burden of pain; suffering, disruption and putting up with it, being old and getting on with living. **Conclusions:** The themes that emerged from the analysis show that pain is a concern for older women, and that there are many who suffer with unrelieved pain despite the availability of analgesics. There is a sense that pain is part of being old and that for many, whilst the pain is bothersome, it is equally important to get on with living their lives.

*A targeted and tailored eHealth weight loss program for young women: The Be Positive Be Health pilot randomised controlled trial.* **Melinda Hutchesson**

**Objectives:** This pilot randomised controlled trial investigated the effects of a 6-month tailored eHealth weight loss intervention (Be Positive Be Health [BPBH]) targeting young women compared to a control group. **Methods:** Young (18-35 years) overweight or obese (BMI 25-34.9kg/m<sup>2</sup>) women (n=57) were randomly allocated to BPBH (n=29) or a waiting list control group (n=28). BPBH aimed to achieve 5-10% weight reduction by supporting participants to modify nutrition and physical activity behaviours, and using evidenced-based weight loss strategies (e.g. self-monitoring). BPBH resources were age and gender tailored, and delivered using eHealth technologies (website, social media, smartphone application, email and text messages). Body weight, body fat, blood pressure and plasma lipids were objectively measured at baseline and 6 months. An intention-to-treat analysis was implemented, with baseline observations carried forward (BOCF) for loss to follow-up. Within group changes from baseline to 6 months were tested using paired t-tests and differences between groups determined using analysis of covariance. **Results:** Participants in the BPBH group significantly decreased body weight (Mean [95% CI]: -1.4kg [-2.7, -0.1], p=0.03), fasting cholesterol (-0.3mmol/L [-0.5, -0.4], p=0.03), systolic (-1.42mm/Hg [-2.0 (-3.9, -0.02)], p=0.048) and diastolic (-1.6mm/Hg [-3.3, -0.02], p=0.047) blood pressure, with no significant change in body fat (-0.7% [-1.6, 0.2], p=0.14). There were no significant changes in the control group, however the changes in weight, body fat, blood pressure and blood lipids in the BPBH group were not significantly different from controls. There was no significant difference (p=0.94) in retention rates for the BPBH (75.9%) and control (75.0%) groups. **Conclusion:** Although significant weight loss and health improvements were achieved using the targeted and tailored eHealth intervention, the extent of weight loss was modest and young overweight and obese women remain a challenging group to engage in healthy lifestyle interventions. Further studies in this population are needed.

*Contraception use, infertility and use of fertility treatment and pregnancy outcome in women with polycystic ovary syndrome: data from a large community-based cohort study.* **Anju Joham**

**Objectives:** Polycystic Ovary Syndrome (PCOS) affects 9-21% of women with significant metabolic, psychological and reproductive complications [1]. We aimed to examine self-reported contraceptive use, pregnancy outcome and number of children in women with and without PCOS in the large Australian Longitudinal Study on Women's Health (ALSWH). **Methods:** This is a cross-sectional analysis of a longitudinal cohort study set in the general community. Mailed survey data were collected at five time points (years 1996, 2000, 2003, 2006 and 2009). Data from participants who responded to the questions on PCOS, contraception and pregnancy outcome were analysed. The main outcome measures were self-reported PCOS, body mass index (BMI), contraception use, pregnancy loss and number of children. **Results:** In women aged 28-33yrs, compared to women not reporting PCOS, women with PCOS were less likely to be using contraception (61% vs. 79%, p<0.001) and more likely to be trying to conceive (56% vs. 45%, p<0.001). A greater proportion of women with PCOS reported pregnancy loss (20% vs 15%, p=0.003). PCOS was not independently associated with pregnancy loss; however BMI was independently associated with pregnancy loss in the overweight and obese groups (OR 1.2, 95% CI 1.04-1.4, p=0.02 and OR 1.4, 95% CI 1.1-1.6, p=0.001 respectively). Fertility treatment use was independently associated with pregnancy loss (adjusted OR 3.2, 95% CI 2.4-4.2, p<0.001). There was no significant difference in number of children between women with and without PCOS. **Conclusions:** In this large community-based cohort, PCOS women had lower rates of contraception use and were more likely to be currently trying to conceive. Whilst reported pregnancy loss is higher in PCOS; PCOS was not independently associated with pregnancy loss. Overall, the number of children per woman is similar in PCOS and non-PCOS groups, albeit with higher rates of fertility treatment. This data highlights the potential importance of preventing, recognising and treating risk factors for pregnancy loss in PCOS, with a need for greater research in this field.

## *Gestational Diabetes and Type 2 Diabetes in Reproductive-Aged Women with Polycystic Ovary Syndrome.* **Anju Joham**

**Context:** Polycystic ovary syndrome (PCOS) affects 6-21% of women. PCOS has been associated with an increased risk of dysglycaemia including gestational diabetes (GDM) and type 2 diabetes (T2DM). **Objective:** To assess the prevalence of dysglycaemia and the impact of obesity in young reproductive-aged women with and without PCOS in a community-based cohort. **Design:** Cross-sectional analysis of data from a large longitudinal study (the Australian Longitudinal Study on Women's Health (ALSWH)). **Setting:** General community **Participants:** Women were randomly selected from the national health insurance database. Standardised data collection occurred at 5 survey time points (years 1996, 2000, 2003, 2006 and 2009). Data from survey 4 (2006, n=9145, 62% of original cohort aged 18 to 23 years) were examined for this study. **Main outcome measures:** Self-reported PCOS, GDM and T2DM **Results:** In women aged 28 to 33 years, PCOS prevalence was 5.8% (95% CI: 5.3%-6.4%). The prevalence of GDM (in women reporting prior pregnancy) and T2DM was 11.2% and 5.1% in women with PCOS and 3.8% and 0.3% in women without PCOS respectively (p for both<0.001). PCOS was associated with increased odds of GDM and T2DM. After adjusting for age, Body Mass Index (BMI), hypertension, smoking and demographic factors, the odds of GDM (OR 2.1, 95% CI 1.1-3.9, p=0.02) and T2DM (OR 8.8, 95% CI 3.9-20.1, p<0.001) remained increased in women reporting PCOS. **Conclusions:** In a large community-based cohort of reproductive-aged women, PCOS was independently associated with higher risk of GDM and T2DM, independent of BMI. Aggressive screening, prevention and management of dysglycaemia is clearly warranted in women with PCOS.

## *Longitudinal weight gain in women identified with Polycystic Ovary Syndrome: Results of a cohort study in young women.* **Anju Joham (On behalf of Helena Teede)**

**Context:** Polycystic ovary syndrome (PCOS) affects 6-18% of women. While obesity exacerbates the features of PCOS, the natural history of weight gain in identified with PCOS has not been well described. We aim to examine longitudinal weight gain in women identified with and without PCOS and to assess the association between obesity and PCOS prevalence. **Setting:** General community **Participants:** Women who were randomly selected from the national health insurance scheme (Medicare) database. **Methods:** Mailed survey data were collected by the Australian Longitudinal Study on Women's Health from women aged 18-23 years at survey 1 (1996). Data from respondents to survey 4 (2006) were analysed. **Main outcome measures:** PCOS prevalence and body mass index (BMI) **Results:** Self-reported PCOS prevalence was 5.8% (95%CI: 5.3%-6.4%). Women reporting PCOS had higher weight, mean BMI [2.5kg/m<sup>2</sup> (95%CI: 1.9-3.1)] and greater 10-year weight gain [2.6kg (95%CI: 1.2-4.0)]. BMI was the strongest correlate of PCOS status with every BMI increment increasing risk by 9.2% (95%CI: 6%-12%). **Conclusion:** This community based longitudinal cohort study is the first to focus on women reporting diagnosed PCOS and shows that weight, BMI and 10-year weight gain were higher in PCOS. We report the novel finding that obesity and greater weight gain are significantly associated with PCOS status. Considering the prevalence, major health and economic burden of PCOS, combined with increasing weight gain in young women, these results have major public health implications. Given the established benefits of weight loss, aggressive prevention of weight gain and management of excess weight in young women is warranted.

## *The relationship between SF-6D health state values and demographic and lifestyle factors in young, middle-age and older women.* **Jeeva Kanesarajah**

**Introduction:** SF-6D is a measure of overall health derived from the SF-36, weighted by preferences from the general public. Little is known on the longitudinal relationship between the SF-6D and demographic and lifestyle factors. It is uncertain whether young, middle-age and older women with poorer health have any demographic or lifestyle factors in common, or whether these factors affect health differently based on life-stage. To fill this gap, this research aims to identify factors associated with poorer SF-6D scores in women at three different life-stages. **Methods:** Self-reported, longitudinal data was drawn from six survey waves for the 1973-78 (young), and 1921-26 (old) cohorts, and seven waves for the 1946-51 (middle-age) cohort from the Australian Longitudinal Study on Women's Health. Linear mixed effects models were used to investigate the research aims. **Results:** Young and middle-aged women had similar average SF-6D scores at baseline (Young, mean 0.63, SD 0.2; Middle-age, mean 0.64, SD 0.2), which remained relatively consistent as they aged. Older women had lower mean scores at baseline, at 0.57 (SD 0.3), which markedly declined as they aged. Adjusted results show underweight older women had larger reduction in SF-6D scores (6%) compared to middle-age (4%) and young underweight women (2%). Older sedentary women had a greater reduction in SF-6D scores (15%) compared with young and middle-age sedentary women (10% each). High risk drinking affected young women with 5% reduction in SF-6D scores, but not middle-age or older women. However, middle-age and older women who were non-drinkers had poorer SF-6D scores. Moderate to severe stress more adversely affected the health of older women (by 28-42%) than young and middle-age women (17-29%). **Conclusion:** Our findings highlight the importance of considering women's life-stage when identifying lifestyle factors associated with poorer SF-6D scores as these factors may not affect women's health uniformly across the life-course.

*Social patterning of overeating, binge eating, compensatory behaviours and symptoms of bulimia nervosa in young adult women: results from the Australian Longitudinal Study on Women's Health.* **Ilona Koupil**

Objective: To study social patterning of overeating and symptoms of disordered eating in a general population. Design: A representative, population-based cohort study. Setting: The Australian Longitudinal Study on Women's Health (ALSWH), Survey 1 in 1996 and Survey 2 in 2000. Subjects: 12599 women aged 18-23 years completed a questionnaire survey at baseline, of whom 6866 could be studied prospectively. Results: 17% of women reported episodes of overeating, 16% reported binge eating and 10% reported compensatory behaviours. Almost 4% of women reported symptoms consistent with bulimia nervosa. Low education, not living with family, perceived financial difficulty (OR 1.8 and 1.3 for women with severe and some financial difficulty compared to none) and European language other than English spoken at home (OR for other European compared to Australian/English) were associated with higher prevalence of binge eating. Furthermore, longitudinal analyses indicated increased risk of persistent binge eating among women with a history of being overweight in childhood, those resident in metropolitan Australia, women with higher BMI, smokers and binge drinkers. Conclusions: Overeating, binge eating and symptoms of bulimia nervosa are common among young Australian women and cluster with binge drinking. Perceived financial stress appears to increase the risk of binge eating and bulimia nervosa. It is unclear whether women of European origin and those with a history of childhood overweight carry higher risk of binge eating because of genetic or cultural reasons.

*Women, Work and Illness.* **Peta Forder (on behalf of Tazeen Majeed)**

Labor policies and economic incentives encourage women to work beyond middle age. However, women exhibit complex patterns of workforce participation over this life stage. This study examined transitions in and out of paid work across the life course of middle-aged women over a 14-year period and investigated associations between work and chronic diseases. The novel statistical technique of Latent Class Analysis (LCA) identified dominant workforce participation patterns among 11,551 middle-aged women from the 1946-1951 birth cohort of Australian Longitudinal Study on Women's Health. Multinomial logistic regression examined associations between work patterns and chronic diseases (diabetes, asthma, depression, and arthritis), while adjusting for health risk factors, sociodemographic factors and competing activities. Five latent classes were identified: "mostly in paid work" (48%), "early paid work" (9.4%), "increasingly paid work" (8.9%), "gradually not in paid work" (11.4%), and "mostly not in paid work" (22.3%). Results showed that women with chronic diseases (diabetes, asthma, depression, and arthritis) were less likely to be in paid work. These associations remained mostly unchanged after adjustments for other factors. The findings of this study provide better understanding of workforce participation patterns in women's late working life. This has important implications for policy design, aimed to engage middle-aged women in paid employment for longer in spite of chronic diseases and their complications. We suggest that there is a need for work place programs that support people with chronic diseases. Policies are also needed to facilitate better prevention and management of chronic health issues over the life course for women, in order to encourage workforce participation over later years.

*Women's Health Week, a national health campaign.* **Janet Michelmore**

Introduction: Jean Hailes (JH) has a strong commitment to improving both the physical and emotional health and wellbeing of all women in Australia throughout their lives. As a part of this focus and in recognition that there was no national woman's health awareness campaign targeting women across the life course, JH established Women's Health Week (WHW). Aim WHW was designed to have a three-fold effect which includes: • Raise awareness of the importance of maintaining good health and prevent future health problems including chronic disease in women • Ensure women are aware of the health services in their local community • Encourage personal responsibility and ongoing prevention behaviours Method: WHW was launched in 2013 and now runs annually with two key delivery platforms. 1. A week-long online campaign with a dedicated website as its hub, providing evidence-based women's health information in a variety of formats to women at different life stages. 2. An on the ground presence through JH launch events and community led events across Australia, run by health professionals, community groups, small businesses and large organisations with a focus on local women's health priorities. Results: Since being launched the annual WHW campaign has grown enormously, with a potential reach of 14 million people online and at community events throughout Australia in 2015. Key achievements in 2015 include: • Launch events in Melbourne, Sydney and Brisbane reaching over 100,000 individuals • 10,055 individuals registered to receive daily evidence-based health information emails • 209 community and corporate events across Australia empowering over 6,000 to empower women to make more informed decisions about their health • 72% increase in visitors to the WHW website with 30,892 visits in 2015 Discussion: Awareness of WHW continues to grow with the campaign now cemented in Australia's health promotion calendar and a range of organisations across the country committing to ongoing support. This campaign is unique as it listens to women and responds to their needs in an effort to help women across Australia make healthier decisions.

*The Association of a Mediterranean-Style Diet Pattern with Polycystic Ovary Syndrome Status in a Community Cohort Study.*  
**Lisa Moran**

Polycystic ovary syndrome (PCOS) is a common condition in reproductive-aged women. While lifestyle management is first-line treatment in PCOS, the dietary intake of women with PCOS is unclear and there is no research assessing dietary patterns of women with and without PCOS. The aim of this study was to examine dietary patterns in a large cohort of women with and without PCOS. Data were from 7569 participants in the 1973–1978 cohort of the Australian Longitudinal Study on Women's Health population assessed at 2009 (Survey 5) (n = 414 PCOS, n = 7155 non-PCOS). Dietary patterns were evaluated using factor analysis and multiple logistic regressions assessed their associations with PCOS status. Three dietary patterns were identified that explained 27% of the variance in food intake between women with and without PCOS: Non-core foods; Meats and take-away and Mediterranean-style. The Mediterranean-style dietary pattern was independently associated with PCOS status. On adjusted analysis for each 1 SD increase in the Mediterranean-style dietary pattern, there was a 26% greater likelihood that women had PCOS. This may indicate an improvement in the quality of dietary intake following a diagnosis of PCOS. Future research should examine the contribution of dietary patterns to the incidence and severity of PCOS and the potential for modification of dietary patterns in the lifestyle management of PCOS.

*Cumulative anticholinergic medicines burden in older women.* **Lynne Parkinson**

Anticholinergic medicines burden is common, can have negative impacts, and is problematic to identify. Many medicines used by older women have anticholinergic effects. Importantly for older women, where multimorbidity and use of multiple medicines is common, even when anticholinergic effect of an individual medicine is small, the anticholinergic effects of multiple medicines may be additive, constituting cumulative anticholinergic burden. This study describes medicines contributing to and predictors of anticholinergic burden, using a secondary analysis of Australian Longitudinal Study on Women's Health survey data linked to Pharmaceutical Benefits Scheme medicines data (2008-2010); for 3694 women born 1921-1926. Anticholinergic medicines were assigned anticholinergic potency levels 0 to 3, according to the Anticholinergic Drug Scale (ADS). ADS ratings for all medicines used by each woman were summed across each six months to give an ADS score. Commonly used medicines were identified for women with high ADS scores (defined as 75th percentile of scores). Predictors of high ADS scores were analysed using generalised estimating equations. During 2008-2010, 1126 (59.9%) of women used at least one anticholinergic medicine. Median ADS score was 4. The majority of anticholinergic medicines used by women with high burden were low potency only. Increasing age, cardiovascular disease, and number of other medicines were predictive of higher anticholinergic burden. High anticholinergic medicines burden in this group was driven by use of multiple lower anticholinergic potency medicines rather than use of higher potency medicines. While we might expect that doctors would readily identify anticholinergic burden risk for those using high potency medicines, they may be less likely to identify this risk for users of multiple low potency anticholinergic medicines. The paper will also discuss how GPs view these findings, and how to translate them into the prescribing setting.

*Iron deficiency and general health, mental health and fatigue in young women: results from a 13- year prospective study.*  
**Amanda Patterson**

**Objectives:** The link between iron deficiency (ID) and poorer general health and increased fatigue is inconclusive. This project used longitudinal data to examine whether poorer health outcomes were associated with concurrent ID in young women. **Methods:** Data came from five consecutive surveys between 2000 and 2012 of the 1973-1978 cohort of the Australian Longitudinal Study of Women's Health (ALSWH). Current ID was defined as self-report of diagnosis or treatment for low iron (iron deficiency or anaemia) in the last three years. Health outcomes included General Health (GH) and Vitality (VT) subscales of the SF-36, and depression scores based on the CES-D. GH and VT are scored from 0-100 with a higher score indicating better health; a score of 10 or more on the CES-D was considered indicative of depression. Mixed effect models were used to analyse repeated GH and VT. All models included ID, age, urban residence, lifestyle (current pregnancy, children living at home) and behavioural factors (smoking status, alcohol consumption, exercise and BMI) and menstrual symptoms. Relative risk of depression was estimated using a Poisson distribution. **Results:** 11862 women provided ID data for at least one of the five surveys. More than half reported low iron at one or more times. Women were most likely to have ID if they had children living with them, were pregnant, or had irregular or heavy periods. In fully adjusted models, ID, behavioural factors and menstrual symptoms had significant adverse effects on GH, VT and depression. The presence of ID resulted in significantly lower mean GH and VT scores [-2.8 (SE 0.21) and -3.2 (SE 0.24) respectively]. The relative risk of depression among women with ID was 1.20 (95% CI 1.15, 1.26). **Conclusions:** ID is common among women of childbearing age and its adverse impact on general and mental health needs to be acknowledged among healthcare providers and authorities.

*Breakfast cereal consumption and incident Diabetes Mellitus: Results from 12 years of the Australian Longitudinal Study on Women's Health.* **Angelica Quatela**

**Objectives:** Diabetes Mellitus (DM) currently affects 9.8% of Australian women. Breakfast cereal consumption has been linked with better health outcomes, including for DM. This study investigated the effect of breakfast cereal consumption on the risk of developing DM among women from the Australian Longitudinal Study of Women's Health (ALSWH), over 12 years. **Methods:** Data from Survey 3 (S3) to Survey 7 (S7) inclusive, from the 1946-51 ALSWH cohort were analysed. Dietary data (DQESv2 FFQ) were available at S3 and S7, and the outcome was incident DM at S4-S7. Women were excluded if: dietary data were incomplete; they reported existing diabetes or IGT at S3; or if total energy intake was <4500->20,000kJ. Logistic regression models were used to investigate the association between breakfast cereal intake (yes or no) at S3 and risk of developing DM. Models were adjusted for: BMI; smoking; marital status; income; dietary intakes (alcohol, fat, protein, carbohydrate, fibre, energy and other breakfast cereals). **Results:** There were 538 incident cases of DM. Total breakfast cereal intake was not associated with incident DM (Odds Ratio=0.99, p value= 0.974, CI: 0.72; 1.37). There were no significant associations with most individual breakfast cereal types (All Bran; Sultana Bran, FibrePlus & Branflakes; Weet Bix, Vita Brits & Weeties; Cornflakes, Nutrigrain & Special K; or Porridge), however, women who consumed muesli had a strong and significant decrease in the odds of developing DM (Odds ratio= 0.72, p value= 0.001, CI: 0.59; 0.88). **Conclusions:** Among mid-age Australian women, total cereal consumption was not significantly associated with the development of DM over 12 years, however, the addition of muesli to their eating pattern appeared to be protective. This effect may be due to a particular profile of muesli eaters that we have not been able to fully adjust for, but the relationship warrants further investigation.

*Prayer or spiritual healing as adjuncts to conventional care: A cross-sectional analysis of prevalence and characteristics of use among women.* **Angela Rao**

**Objectives:** To determine the prevalence and characteristics of women who use prayer or spiritual healing. **Methods:** This cross-sectional study was conducted as a part of the Australian Longitudinal Study on Women's Health. Women from the 1973-78 cohort (n=8180) (31-36 years) and 1946-1951 cohort (n=9965) (59-64 years) were surveyed in 2010. In addition to demographic factors and measures of health status, use of prayer or spiritual healing was ascertained. Chi square tests, analyses of variance and a stepwise backward logistic regression model using a likelihood ratio test were undertaken. **Results:** Approximately 20% of Australian women aged 31-36 years and 26% of women aged between 59 and 64 years use prayer or spiritual healing on a regular basis. Women aged 31-36 years with illness symptoms, including palpitations (OR 1.32, 95% CI: 1.11, 1.58), and women aged 59-64 years with severe tiredness (OR 1.25, 95% CI: 1.12, 1.40), depression (OR 1.30, 95% CI 1.11, 1.53), anxiety (OR 1.33, 95% CI: 1.15, 1.53), or chronic illnesses, including diagnosed cancer (OR 1.84, 95% CI: 1.28, 1.65), or other major illnesses (OR 1.43, 95% CI: 1.18, 1.75) were significantly more likely to use prayer or spiritual healing than women without these symptoms. Women in both cohorts were significantly more likely to use prayer or spiritual healing if they were non-smokers or used other complementary therapies. **Conclusions:** A significant proportion of adult women are using prayer or spiritual healing. Given their significant association with illness symptoms and chronic illness, there is a need to engage in dialogue with health care providers regarding use of prayer or spiritual healing practices for symptom management. Future research is warranted into whether specific populations use prayer or spiritual healing, reasons for use, and whether these result in real or perceived benefits to health-related outcomes and general well-being.

*Prevention and early intervention for perinatal mental health: An evaluation of outcomes for women who give birth in Australia.* **Nicole Reilly**

**Objectives:** Clinical practice guidelines now recommend that women be asked about their past or current mental health as a routine component of maternity care. The purpose of this body of research was to examine the equity of access to, and clinical effectiveness of, this prevention and early intervention approach to perinatal mental health using data from women who had recently given birth in Australia. **Methods:** A sub-sample of women (N=1804) from the Australian Longitudinal Study on Women's Health (ALSWH) Young Cohort participated in the study. Data was drawn from the ALSWH Main Surveys for Young Women (1996-2009) and from the ALSWH perinatal mental health substudy survey (2011). **Results:** Results showed that there are clear disparities in access to psychosocial assessment at health-service and socio-demographic levels, particularly during pregnancy. Results also showed that asking women about current and past mental health is not only a good practice approach but does not unnecessarily inflate referral rates. Subsequent analyses demonstrated that this line of enquiry is associated with help seeking throughout the perinatal period, in particular when women are also referred for additional follow-up or management, as required. The most consistent predictors of maternal mental health and parenting outcomes across the first two years following birth were overall social support, significant stressors in the 12 months prior to survey completion and delayed help seeking. **Conclusions:** This program of research provides an important contribution to the ongoing debate relating to the clinical efficacy of depression 'screening' during pregnancy and the postpartum, and to the appropriateness of a broader approach to psychosocial assessment (inclusive of enquiry relating to available supports and recent stressors) at this time. Opportunities to minimise the current shortfall in assessment rates, the need for ongoing monitoring of assessment activity at a national level, and the clinical and resource implications of these findings for the primary health care sector will be discussed.

## *Young women's psychological distress after a diagnosis of polycystic ovary syndrome or endometriosis.* **Ingrid Rowlands**

**Objectives:** To examine the prevalence, and predictors, of psychological distress among young women diagnosed with polycystic ovary syndrome (PCOS) or endometriosis relative to women without these conditions. **Methods:** We analysed data from 17,015 young women (born 1989-95) participating in the Australian Longitudinal Study on Women's Health. Women were aged 18-23 years when they completed their first survey in 2012-13. Logistic regression was used to compare the odds of psychological distress among women reporting a recent (within the last 12 months) and previous diagnosis of PCOS or endometriosis to women without a history of these conditions, and to examine the factors associated with women's distress. **Results:** Around 60% of women reporting a recent or previous diagnosis of PCOS or endometriosis had moderate to severe levels of psychological distress. Young women recently diagnosed with PCOS (OR = 1.88; 95% CI = 1.42-2.51) or endometriosis (OR = 1.92; 95% CI = 1.31-2.81) had greater odds of moderate to severe distress in the year prior to diagnosis than women without these conditions but their distress did not significantly differ from women previously diagnosed with these conditions. Although menstrual symptoms including dysmenorrhea and menstrual cycle irregularity were associated with women's psychological distress, these symptoms did not fully explain the mental health differences between women with, and without, these conditions. **Conclusions:** We found very high levels of psychological distress among young women with PCOS and endometriosis in this population-based study. The finding that psychological distress was not dependent on the timing of the diagnosis offers strong evidence for the need to make mental health assessments and treatments available to women seeking care for hormonal symptoms. Further examination into the sources of distress for young women with PCOS and endometriosis will assist with the development of supportive interventions.

## *Does childhood trauma predict mortality among older women?* **Margot Schofield**

While past research has examined health impacts of childhood trauma into adulthood, relatively little is known about the impact into old age, and what factors may influence that relationship. This study addresses a significant gap in the literature by examining whether retrospectively self-reported childhood trauma predicts mortality and disability in old age. The study also tests the effect of a series of potential moderators of this relationship, to identify factors associated with the development of resilience following childhood trauma. This study involved a 15-year follow-up of the 1921-26 ALSWH cohort, using survey data collected approximately every three years from 1996 to 2011. The cohort comprised 12,066 older women at first survey in 1996, aged 70-75, declining to 4,055 women aged 85-90 in 2011. Survival outcomes are determined by linkage to the NDI. Survival was calculated as number of days between study entry and date of death or survival at October 31, 2011. Disability outcomes were measured at each survey by the question, "Do you regularly need help with daily tasks because of long-term illness, disability, or frailty (for example, personal care, getting around, preparing meals)?" Time to disability is calculated as occurring halfway between the dates on which surveys were returned. Survival Analysis was used to build the best fit model, initially adjusting for age and area of residence. Other factors were progressively added to the model: demographic factors, social support measures, health behaviours, any chronic conditions, and poor mental health. The paper reports the results of these analyses and discusses the implications for policy and practice, as well as future research needs.

## *A cross sectional study investigating motivations for weight change and weight loss methods used in women following childbirth.* **Lisa Spencer**

**Background:** Weight retention following childbirth is common and increases the risk of chronic disease and adverse maternal and child health outcomes in future pregnancies. Limited information exists on motivators for weight change and healthy lifestyle behaviours at this life-stage. This study explored motivations for weight change and methods used for weight management following childbirth, and evaluated differences by sociodemographic, weight status and pregnancy characteristics. **Methods:** Women aged 18-40 years and up to five years following childbirth (n=874), completed an online survey. Women who reported being unhappy at their current weight ranked their most to least important reasons for wanting to change their weight. Weight control methods used in the previous two years were reported from a list of 12 options. Chi-squared tests were used to investigate differences within sub-groups. **Results:** Participants (32.8±4.5years, pre-pregnancy BMI 25.6±5.7kg/m<sup>2</sup>) were most commonly married (95.7%), with one child (44.4%) and university educated (51.9%). The majority (68.1%) were not happy at their current weight. The most prevalent motivators for weight change were improving health (26.1%) and lifting mood (20.3%). Compared to healthy weight and overweight women, obese women were significantly more likely to report improving health (18.8% vs 28.3% vs 36.5%, p<0.001), being a better family role model (2.0% vs 5.1% vs 8.1%, p<0.001) and keeping up with their children (4.3% vs 6.8% vs 15.5%, p<0.001) as the most important reason for weight change. Three-quarters (75.7%) of women reported having used at least one weight loss method in the previous two years with independent dietary (54.9%) and physical activity (60.1%) changes the most common. Only 4.6% reported visiting a health professional to assist with weight loss. **Conclusion:** Women report various motivations toward weight change following childbirth; however few seek health professional support to lose weight. Weight management support provided at this life-stage needs to consider individual motivators in order to engage women at this life-stage.

*Predictors of pregnancy termination for psychosocial reasons by Australian women over time: secondary analysis of the 1973 ALSWH cohort.* **Angela Taft**

**Objectives:** To examine trends over time in determinants of pregnancy termination. **Methods:** Setting: Five surveys of ALSWH, a longitudinal postal survey of associations between reproductive, psychological and social factors and health. **Participants:** Australian women born 1973 to 1978 first surveyed at ages 18-23 in 1996, who responded to at least two consecutive of five postal surveys (N=9,042). **Main outcome measures and analysis:** Primary outcome is pregnancy termination. Explanatory variables included socio-demographic factors and contraception, prior terminations, alcohol, drugs, childhood sexual abuse, violence, and mental health. Multiple logistic regression using GEE. **Results:** Proportions of women reporting new termination reduced from 7% at surveys 1 and 2 to 2% at surveys 4 and 5. By survey 5, 16% reported one or more termination, but only 2% a new termination. Women in their twenties were more likely to have a termination if they were: unmarried (aOR1.75 CI 1.20-2.56), had one child (aOR1.88 CI 1.18-2.98), used less effective methods of contraception (aOR2.18 CI 1.65-2.89), increased to risky alcohol use (aOR1.65 CI 1.14-2.38), used illicit drugs  $\leq 12$  months (aOR3.09 CI 2.28-4.19), reported childhood sexual abuse (aOR1.40 CI 1.08-1.80), or recent partner violence (aOR2.42 CI 1.61-3.64). By their thirties, women were more likely to terminate if: they ceased to be married (aOR2.65 CI 1.74-4.05) or were unmarried (aOR2.24 CI 1.49-3.39), had two children (aOR2.11 CI 1.42-3.13), reported violence, especially recent non-partner violence (aOR2.14 CI 1.30-3.52) or used illicit drugs  $< 12$  months (aOR2.68 CI 1.76-4.08). Women with aspirations to be fully (OR1.58 CI 1.37-1.83) or self-employed (OR1.28 CI 1.04-1.57), have no children (OR1.41 CI 1.14-1.75) and further their education (OR 2.08 CI 1.68-2.57) were more likely to terminate than other women. **Conclusions:** Efforts to reduce unwanted pregnancy should focus on factors that affect women's reproductive autonomy, such as effective contraception, interpersonal violence and illicit drug use.

*Prevalence of dementia among Australian women aged over 70: application of capture-recapture methodology on data from multiple sources.* **Michael Waller**

**Introduction:** Accurate estimates of dementia are needed to plan health services. This study used linked data to estimate the prevalence of dementia in Australian women. **Methods:** There were 12,432 women born in 1921-1926 who completed an Australian Longitudinal Study on Women's Health survey. These data were linked to records of aged care assessments and services, hospital admissions, drug prescriptions, and death certificates, to estimate the prevalence of dementia. Capture-recapture methods were used to estimate the number of cases not identified from any of the available sources. **Results:** Over 16 years follow-up, 20.4% (95% CI (19.7%, 21.1%)) of women were recorded as having dementia on at least one data source. Using capture-recapture methods, this estimate increased to 26.2% (95% CI (25.5%, 27.0%)). **Discussion:** The results demonstrate the importance of using multiple sources when estimating rates of dementia, and highlight the need to estimate and include cases not identified from any data-source using capture-recapture methods.

*Lifestyle behaviours and cardiovascular disease risk in young overweight and obese women: A cross-sectional analysis.* **Megan Whatnall**

**Objectives:** This cross-sectional analysis aimed to describe lifestyle behaviours and cardiovascular disease (CVD) risk markers in young overweight and obese Australian women, and explore the associations between individual and combined lifestyle behaviours with CVD risk markers. **Methods:** Baseline data from a randomised controlled trial of young (18-35 years) overweight and obese (BMI 25-34.9kg/m<sup>2</sup>) women (n=46) were analysed. Data on five lifestyle behaviours (diet quality, alcohol intake, physical activity, sitting time and smoking status) were captured, with the five behaviours considered in calculating a healthy lifestyle score (0-5). Participants were attributed one point meeting a pre-specified criteria based on evidence-based recommendations for each lifestyle behaviour, or zero otherwise. CVD risk markers were objectively measured including BMI, body fat, waist circumference, blood pressure, triglycerides and total, HDL and LDL cholesterol. Associations between individual lifestyle behaviour as well as the combined healthy lifestyle score, with CVD risk markers were explored using linear regression. **Results:** The mean  $\pm$  SD diet quality score was 32.2 $\pm$ 8.8 points, alcohol intake 3.2 $\pm$ 2.4 standard drinks/day, physical activity 7184 $\pm$ 2562 steps/day and sitting time 598 $\pm$ 318 minutes/day. All participants were non-smokers. Most participants (82.6%) waist circumference was  $\geq 80$ cm and a significant number of participants' total (26.7%), HDL (43.9%) (n=18), and LDL (17.1%) cholesterol were outside normal reference range. Step count was inversely associated with BMI ( $\beta = -0.0004$ kg/m<sup>2</sup>, p=0.007), diastolic blood pressure ( $\beta = -0.0012$ mmHg, p=0.015) and waist circumference ( $\beta = -0.0010$ cm, p=0.035). No significant associations were found between a combined healthy lifestyle behaviour score and CVD risk markers. **Conclusions:** Unhealthy lifestyle behaviours and CVD risk markers are prevalent in young adult women in Australia. The finding of an association between physical activity and CVD risk markers suggests that interventions targeting this behaviour in young women could improve cardiovascular health

### *The maternal health system costs of adverse birth outcomes.* **Jananie William**

**Objectives:** The objectives of this research were threefold: to quantify the difference between maternal health system costs of women who experienced adverse birth outcomes and those that did not (“cost differentials”), to identify risk factors that drive the maternal health system cost (“cost risk factors”) and to use the results to inform maternal health policy. To date, no such studies have been conducted with Australian data. **Methods:** Multivariate modelling techniques including Classification and Regression Trees (CART) and Generalised Linear Modelling (GLM) were employed on large ALSWH datasets linked with numerous administrative datasets (including the Admitted Patients Data Collection, Perinatal Data Collection and the Medicare Benefits Schedule). This comprehensive linked dataset enabled the analysis of the associations between hundreds of risk factors and their impact on costs. Separate costing studies were conducted for hospital and out-of-hospital costs across three perinatal sub-periods (antenatal, delivery and postnatal period). **Results:** The results showed that the mean maternal health system cost differentials for adverse births were substantial at 23% and 27% for hospital and out-of-hospital costs, respectively. Adverse births were also a statistically significant cost risk factor when considered in a multivariate framework with numerous other cost risk factors. The significant cost risk factors were mode of delivery, use of In Vitro Fertilisation treatments, specialist and general practitioner use, private health insurance status, adverse births, diabetes, smoking status, area of residence and mental health factors. **Conclusions:** Adverse births were a statistically significant maternal health cost risk factor with substantial cost differentials observed. The multivariate modelling showed there were a number of key areas where health resources may be directed. Mental health was identified as a priority area with policy recommendations including universal and improved screening, early intervention and increased funding for mental health initiatives.

### *Hot flushes and night sweats symptom profiles over a 17 year period in mid-aged women: the role of hysterectomy.* **Louise Wilson**

**Background:** Many women who have a hysterectomy do so between the ages of 40 and 55, a time in life when many women experience vasomotor symptoms (hot flushes and night sweats). Depending on frequency, duration and severity, these symptoms can impact upon overall quality of life, productivity and social relations. The experience of vasomotor symptoms by women with a hysterectomy is an under-studied area, and in particular, there is limited analysis using longitudinal data. **Objectives:** To determine the symptom patterns for hot flushes and night sweats in a cohort of Australian women, and whether there are differences in the symptom patterns between women who have had a hysterectomy and women who experience natural menopause. **Methods:** Repeated measures latent class analysis (LCA) was used to identify hot flushes and night sweats symptom patterns across seven surveys in the mid-cohort of the Australian Longitudinal Study of Women’s Health (born 1945-1950). Multinomial logistic regression was then used to assess the associations of hot flushes and night sweats symptom patterns in women with a hysterectomy versus women who experienced natural menopause. **Results:** Four LCA patterns for hot flushes and night sweats were identified: “minimal”, “late-onset”, “early-onset” and “constant”. In multinomial logistic regression analysis women with a hysterectomy had higher odds of constant hot flushes versus minimal hot flushes (OR = 2.16, 95% CI: 1.87, 2.50) and early-onset and constant night sweats (OR = 1.79, 95% CI: 1.56, 2.06 and OR = 1.91, 95% CI: 1.60, 2.28 respectively). These higher odds ratios were not explained by lifestyle factors, socio-economic factors or menopausal hormone therapy use. **Conclusion:** Women who have a hysterectomy have higher risk of constant hot flushes and night sweats symptom patterns. Awareness of this risk can help inform management of these symptoms

### *Changing continuity of care for Australian Women.* **Michael Wright**

**Introduction:** The Australian population is ageing and more women are living in the community with multiple chronic diseases. Additionally, there have been changes to the structure of general practice, with trends for GPs to work together, for general practices to amalgamate, and for a greater range of on-site health care providers at any practice. It is unclear how changes to our population and primary care structure are affecting patient preferences for seeking continuity of care with a GP and with a practice, and particularly the effect on women in seeking primary health care. **Methods:** This presentation will use data from the Australian Longitudinal Study on Women’s Health (ALSWH), a large survey of Australian women, which began in 1996. Two of the four cohorts (women born 1946-1951 and women born 1973-1978) have been questioned in multiple surveys about whether they attend the same GP and the same practice. Changing preferences for seeing the same provider and practice are analysed, and non-linear panel models are used to analyse factors associated with women having increased continuity of care with a provider and a practice. **Results:** Over the 15 years of survey data, there has been a 15% relative increase in women reporting always attending the same general practice (from 70.8%, to 81.7%), while women who always see the same GP rose 8.8% (from 47.2% to 51.4%) for the 1946-1951 cohort. There is strong correlation between women’s preferences for continuity of care at both provider and practice level and increasing age. **Conclusions:** Women’s preferences for continuity of care change as they age, and there is a trend for women to increasingly consider continuity at a practice, as well as with an individual provider.