Mars and Venus: does gender matter in ageing?

Julie E Byles, Matthew Carroll and the Mars and Venus Writing Team

Gender is more than just a variable to be controlled for in statistical analyses

Does ageing affect men and women equally? If not, how might differences affect research — and subsequently clinical practice? To answer this and related questions, the Mars and Venus: Does Gender Matter in Ageing? conference was convened by the University of Newcastle's Research Centre for Gender, Health and Ageing, in association with the Australian Association of Gerontology and the Healthy Ageing Theme of the Australian Research Council/National Health and Medical Research Council (NHMRC) Research Network in Ageing Well.[1] The 2-day conference, held in Newcastle in July 2007, featured longitudinal studies of ageing that have given specific attention to the health of men or the health of women, and introduced an NHMRC-funded initiative to link two of these studies. The conference also included a 1-day research workshop, sponsored by the Ageing Well Network, which involved researchers from longitudinal studies of ageing being conducted in Australia, and considered how such studies might take greater account of gender in their design and analysis. The conference attracted 85 participants from across Australia and overseas, who came together to consider ways in which the effects of ageing are unequal between men and women, and how these differences might be further exaggerated through interactions with socieconomic status and background.

Conference overview: seeking balanced debate

The theme of the conference was set by Cherry Russell (School of Behavioural and Community Health Sciences, University of Sydney), who gave a keynote address, *Ageing and the gender agenda: a critical reflection*, which outlined gender differences in life expectancy, health, income, care needs, and level of social isolation, along with a discussion of gender biases in policy and service provision.

Compared with men, women have more chronic illness and greater health service use at older ages; but they also live longer. Men have more fatal illness at younger ages.[2] For instance, men have coronary artery disease earlier and have a higher death rate. Lung cancer is more common among men, who have had higher rates of smoking than women. Women have a higher incidence of musculoskeletal problems and a higher prevalence of incontinence, although these problems are also important for men. Although hip fracture also affects older men, the incidence increases at a later age and fewer men survive to the age of high risk. Women, therefore, dominate the clinical picture.

Some health differences are related to biological sex; however, many differences are strongly linked to social influences of gender. These less obvious differences include environmental, occupational and behavioural risks, behaviour, and different adaptive techniques. There are also considerable differences in social roles and access to financial and social resources — which significantly affect the experience of ageing.

Cherry Russell noted that there has been little balanced debate as to what the unequal effects of ageing for men and women mean and where they stem from. Debates about gender and ageing have focused on loss of men's work roles, older women's double disadvantage from age and gender inequality, and on a "paradigm of competitive suffering". In contrast, this conference aimed for greater balance in considering how gender influences the health and wellbeing of men and women as they age.

This theme was reflected in the proffered papers and workshops. Papers explored age and gender issues such as living arrangements; health and engagement for older men; gender bias in health service programs; retirement issues; and current research on gender differences, including results from the Household, Income and Labour Dynamics in Australia (HILDA) study and Melbourne Longitudinal Studies of Healthy Ageing (MELSHA). Workshop topics explored the needs of homosexual and transgender people, gender issues in dementia and sexuality in residential aged care, and the practicalities of conducting a large longitudinal study: the Australian Longitudinal Study on Women's Health.

Longitudinal studies: a focus on gender

Keynote addresses throughout the conference featured longitudinal studies of older men and women. The Concord Health and Ageing in Men Project (CHAMP), presented by Bob Cumming (Centre for Research and Education on Ageing, School of Public Health, University of Sydney), involves 1705 men aged 70 years and over. Early findings from this study show a sharp increase in multiple falls, and declines in continence, cognitive function, and activities of daily living starting after the age of 80.[3] The Florey Adelaide Male Ageing Study (FAMAS), presented by Gary Wittert (School of Medicine, University of Adelaide), focuses on chronic physical and psychological disease and reproductive and sexual health.[4] Measures of testosterone show an age-associated increase in sex-hormone-binding globulin and a decrease in free testosterone, a change that may be adaptive rather than pathological. The Health in Men Study (HIMS), presented by Leon Flicker (Graduate Research School, University of Western Australia), involves 4262 men, and focuses on physical and psychosocial morbidity (including depression), health risks, weight and body mass index, cognition and mortality. One finding from this study has been the importance of health and lifestyle factors in determining cognitive function, even in advanced old age.[5]

Emily Banks (National Centre for Epidemiology and Population Health, Australian National University) provided an overview of the United Kingdom's Million Women Study (MWS), which has shown increased risks of breast cancer,[6] endometrial cancer,[7] and ovarian cancer with use of hormone replacement therapy,[8] and a protective effect on fracture.[9] Annette Dobson (Division of Epidemiology and Social Medicine, University of Queensland) represented the Australian Longitudinal Study on Women's Health (ALSWH), which has been running since 1996, and has investigated many factors affecting women's health and ageing, particularly the influence of social context on health and health care use.[10] Recent reports from this study emphasise the burden of illness associated with non-fatal conditions such as arthritis, the prevent-

Commonalities and differences between studies of men and women identified at the workshop

Commonalities

- Medication
- Obesity and weight
- Cardiovascular outcomes (heart attack, stroke)
- Health risks: smoking and alcohol
- Diabetes and the metabolic syndrome
- Falls
- Fracture and osteoporosis
- Hearing and vision
- Anxiety and depression
- Sleep
- Other medical history
- Quality of life
- Mobility and dependence
- Housing and neighbourhood
- Social support
- Health service availability, access and use
- Living arrangements and marital status

Differences

Men (Mars)	Women (Venus)
• Testosterone levels	• Effects of hormone replacement therapy
	• Hysterectomy
• Dementia and Alzheimer's disease	
• Sarcopenia (age-related muscle loss)	
• Incontinence: urine flow	• Incontinence: leaking urine
• Lower urinary tract symptoms	• Dysuria
	• Widowhood
	• Caring
	• Transport
• Prostate cancer	• Breast cancer
	• Endometrial cancer
	• Ovarian cancer
• Erectile dysfunction	

able burden of obesity, and safe levels of alcohol intake for older women.[11]

Leon Flicker, Annette Dobson and Julie Byles (Research Centre for Gender, Health and Ageing, University of Newcastle) also gave an overview of the recently funded Men, Women and Ageing Study, linking HIMS and ALSWH to generate cross-gender analyses. Additionally, Gita Mishra (University College, London) showed how gender interacts with effects of childhood socioeconomic status in determining early mortality in the 1946 British Birth Cohort. For example, a father's occupation had a strong effect in women, but no significant effect in men.

Studies of men and studies of women

What are the similarities and the differences?

A workshop involving investigators from longitudinal studies and other researchers compared and contrasted issues, approaches and findings of longitudinal studies of men and women. Identified commonalities and differences between studies of men and women are shown in the Box.

The main differences were conditions that could not be experienced by the opposite sex, such as hysterectomy for women and prostate disease for men. However, studies of men had a focus on testosterone and sexual function that was not mirrored by female equivalents. Studies of women measured oestrogen levels and sexual problems in relation to menopausal changes, not in relation to health in later life.

Other differences were more subtle. For instance, while prostatism is a male issue, lower urinary tract symptoms are also experienced by women. It was agreed that more emphasis on these symptoms may be appropriate for studies involving women.

As a general observation, studies involving men applied a biological framework, whereas studies of women applied a social model. For instance, caring has been emphasised in women's studies but caring may be an equally important, although different, issue for men. Health after the death of a spouse has also been given greater emphasis in studies of women. Men are more likely to repartner, but this comparison is confounded by the construction of relationships, with men preferring to cohabit and women preferring to live apart from a new partner.

Transport and mobility were also identified as major issues for women. This need may be experienced differently by men, for whom loss of a drivers licence may present more than a practical problem of "how to get around", as it may also lead to depression and general decline.

Cross-gender analyses: what are the opportunities?

The workshops also explored how longitudinal studies of ageing can be analysed from a gendered perspective. It seems that almost any question on the ageing research agenda can be subjected to a gendered analysis.

For instance, comparing genders:

- Which differences exist at a biological level, and which are socially determined?
- Does socioeconomic disadvantage have a differential effect on health?
- Does caring by men and women involve different activities and dimensions?
- What is the effect of ageing on sexual function, sensuality and spirituality? Is there a differential change in the importance of these outcomes with age?
- How do men and women engage with the health care system? Does health care need to become more gender-sensitive?
- Are there differences in diet and nutrition? Does nutrition have a differential effect on health outcomes according to gender?
- Are the predictors of survival and longevity different among women and men? For example, does comorbidity have a stronger effect in men?
- Do men and women have different health goals? If health is seen not as an end, but as a means to achieving life goals, then health will have different effects in men and women if their life goals are not the same.

Gendered comparisons: simple or complex?

However, gendered comparisons may not be as simple as stratifying variables by age and sex. Men and women may exhibit different levels of accuracy and reliability in reporting exposures and outcomes, and many measures have a strong gender bias. For instance, caring appears to have very different meanings and manifestations for men and women. Physical activity has a different nature, context, and inherent value. Even when the same measures can be used, different categorisations may be needed, especially if underlying distributions and associations vary by gender.

Further, influences of gender may interact strongly with cognitive status, marital status and other socioeconomic factors. Cohort effects are also likely to be important, with changes in the social meaning of gender over time (for instance, disparities in education, employment, occupation, and assets have changed over the past century). The power that can be achieved by combining data from existing longitudinal studies, as will occur in the Men, Women and Ageing Study referred to above and in the Dynamic Analyses to Optimize Ageing (DYNOPTA) project led by Kaarin Anstey of the Australian National University, will allow robust statistical analysis of gender interactions and, in the case of DYNOPTA, the use of nested cohorts to control for cohort and geographical effects.

Closing remarks

Julie Byles and Hal Kendig (Faculty of Health Sciences, University of Sydney) noted that the discussion from the conference and the longitudinal studies workshop provided valuable insights into basic gender differences and will inform research for years to come. Sex and gender differences matter not only to the experience of ageing, but are also manifested in the design of the research projects which, to date, have shown a clear gender-specific focus. Participants agreed that gender is more than just a variable to be controlled for in statistical analyses — it needs to be understood within a social context and be included in all future analyses. In this way, we may achieve not only greater understanding but also greater benefits in future clinical practice.

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Competing interests

None identified.

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