

It has long been established that gender differences in health status exist in the developed world; women have higher rates of morbidity compared to men, however, men have higher mortality rates and hence lower life expectancy. Much less attention has been paid, however, to gender differences in health in Asia. The topic is extremely important given the aging of Asia's populations. The pace of population ageing in Asia is now among the fastest in the world, and the numbers of persons aged 60 and over is expected to triple by the year 2030 (Hermalin 2000; United Nations 1999). Within this age group, the proportion of oldest-old (80 and above) is expected to double, and it is among this group that the prevalence of health problems is greatest. Older age is often associated with a deterioration in health status and an increase in problems with physical functioning, chronic disease, and cognitive functioning. In developed countries, older women tend to report more chronic conditions and functional limitations compared to older men. Whether similar gender differences in health status exist in Asia, and the size and determinants of these gender differentials, remain urgent empirical questions given the need for Asian countries to fashion adequate and appropriate health care systems.

The study of gender differences in health in old age is important for many reasons. Although women have, on average, longer life expectancy compared to males, they also experience fewer years of active life expectancy. Given that women make up the bulk of the older population, assessing their health status has important implications for the type and extent of health care service provision in any country. Women are the caregivers in most societies, often caring for ailing spouses and other family members. When older women begin to need personal care they are often widowed without a partner to look after them. This renders women reliant on the unpaid care of relatives or statutory services whose care may be less than adequate (Mason, 1992; Meon 1996; Afzal, 1996). Older women are also typically at a social and economic disadvantage compared to men, particularly in the Asian context (Taylor and Ford, 1983; Afzal, 1996; Mehta, 1997; HelpAge International, 2000; Yu et al., 1988; Jitapunkul et al., 2002; United Nations, 2002). In patriarchal Asian societies, women often occupy lower status roles compared to men. They are less likely to have ever worked, and are in typically lower-paid jobs compared to men, and therefore have fewer economic resources in old age.

In this paper we focus on the effects of demographic and socioeconomic characteristics, health risk behaviors, and "social support" variables on the self-reported perceived and objective health status of older men and women in Singapore. In an excellent review of the literature, Verbrugge (1985) notes that gender differences in health in developed countries are mainly an outcome of roles, stress, life styles, and preventive health practices, followed by psychosocial factors, prior health care, biological factors, reporting factors, and caretaker factors (in that order of importance). Most studies attempting to explain gender differences in health have used these broad categories of determinants as a principal guiding framework. Studying Asian populations provides further testing of the hypotheses embedded in this framework. Culture and religion may also play a role in how health is perceived and managed in individuals' lives. Asia with its rich and vast cultural landscape presents a cacophony of cultures that may have very different perceptions and attitudes towards individual health. As a result, the factors underlying

gender differences in health in Asian countries may be quite different compared to those factors which are important in the developed world.

Currently 7% of the Singapore population is aged 65 and above, and by the year 2030, 19% of the population will be aged 65 and above (Inter Ministerial Report on the Aged 1999). Life expectancy in Singapore is among one of the highest in the world -- comparable to Japan, the United Kingdom, and the United States. Singaporean females live on average 79.9 years which is slightly higher than the United States where females live on average for 79.7 years. Singaporean males have an average life expectancy of 76.5 years compared to American males whose average life expectancy is 74.3 years. Although Singaporean females live approximately four years longer compared to their male counterparts, females have only a two year advantage in terms of healthy life expectancy, that is, the number of years spent without a disability (WHO 2004). Understanding the determinants of gender differences in health status will be instrumental in lengthening the active life expectancy of females.

This paper builds on existing literature on gender differences in health status in three ways: (i) by investigating whether gender differences in health status exist in an Asian setting with unique cultural differences and whether these gender differences can be explained using theories developed in the West, (ii) by focusing in on the older population of Singapore and hence adding to the literature on aging, gender, and health, and, (iii) by using three measures of health status (perceived health, presence of a chronic illness, and functional disability) as opposed to a single measure, thus providing a richer and more extensive analysis of health status among older adults in Singapore. This is the first study, to our knowledge, that focuses on gender differences across these three health measures for Singapore.

Data

We use cross-sectional data from the 1999 survey of *Transitions in Health, Wealth, and Welfare of Elderly Singaporeans: 1995-1999*. The data were collected as part of a follow-up to the 1995 National Survey of Senior Citizens. In 1995, a representative sample of 4,750 individuals aged 55 and above were interviewed concerning a variety of issues including demographic characteristics, work and retirement, living arrangements and intergenerational support, income and assets, health status and behaviors, and involvement in voluntary activities and organizations. Although the original 1995 survey was not designed as a longitudinal survey, in 1999, National University of Singapore researchers attempted to re-interview as many of the original respondents as possible. This research project was a collaborative effort between researchers at the National University of Singapore, the Ministry of Community Development and Sports (Singapore), and the Population Studies Center of the University of Michigan (USA). We were able to re-contact 42% of the original respondents.¹ Our analysis is weighted to reflect this attrition in the panel sample. We calculated a weight adjustment based on the estimated probability of non-response derived from a multivariate regression model including age, sex, ethnicity and marital status as the predictors of non-response.

¹ The mortality rate for this age group is estimated to be 4% per year. Other losses to follow-up were mainly a result of moves and thus an inability to re-contact respondents.

Respondents who were lost to follow up tended to be males, younger, wealthier, and the unmarried. The original (baseline) sample weight was multiplied by this weight adjustment in order to obtain the panel sample weight. This adjusted weight was then normalized to ensure that the weighted sample size is equal to the actual sample size, by dividing by its mean. (Full details of the weighting procedure and model specification can be found in Ofstedal et al., Forthcoming.)

Dependent variables

We use three different measures of health in our analysis: perceived health, the presence of a chronic condition, and functional disability.

Perceived health is the respondent's subjective assessment of his or her general health. Response categories included very good, good, not too good (minor illness, general weakness, etc.), poor and don't know. Individuals who responded "very good" and "good" were combined to form a "good health" category. Individuals who reported "not too good" and "poor health" were combined to form a "poor" health category.

The presence of at least one *chronic condition* is measured using individual responses to the question, "Has the doctor ever said you have or had any of the following conditions?" The response categories included 11 types of chronic conditions, such as diabetes, arthritis, and hypertension.²

Functional disability is based on self-reported difficulty conducting activities of daily living (ADLs), instrumental activities of daily living (IADLs), and several Nagi indicators.³

Results

We found strong and significant gender differences in health status among older Singaporeans, across all of our three health measures. Older women are significantly more likely to be in poorer health compared to older men, irregardless of the type of health measure used (perceived health, chronic illness, or functional disability). Thus Singapore does not differ from Western or other Asian countries in the existence, and direction, of gender differentials in health status. These gender differences in self-assessed health are no longer significant when we control for socioeconomic differences, however, these controls do not explain gender differences in chronic illness and functional disability. Gender differentials in chronic illness and functional ability continue to remain once we control for all explanatory factors in our model.

Older men and women in Singapore differ significantly in terms of a variety of demographic, socioeconomic, health behaviors, and social support variables. Previous

² The full set of conditions include: stroke, high blood pressure, diabetes, cancer, chronic lung disease, heart attack, arthritis, permanent loss of memory, kidney problems, cataracts or glaucoma.

³ Nagi indicators include questions on mobility, such as whether the individual can lift a 5kg bag of rice, crouch, climb 1-2 flights of stairs, and walk 200-300 meters. Details on the construction of this variable are available on request from socchana@nus.edu.sg.

studies have often found that poor health is associated with being unmarried, lower socioeconomic status, high-risk health behaviors, and little social support. Our analysis shows that the effects of these characteristics differ significantly between older males and females in Singapore. Rather than being disadvantaged, unmarried older females report better health than their male counterparts. Older females living alone are more likely to report a chronic condition. The perception of income adequacy has a greater positive effect on health for older women compared to older men. In summary, our study shows that men and women differ in the types of characteristics that affect their health. This is particularly relevant when examining health status in Asian societies where gender roles continue to be traditionally defined.

Our results have several important policy implications. Marriage does not appear to have an unequivocal positive effect on women's health and this should be taken into account by policy makers concerned with increasing rates of non-marriage and delayed marriage in many Asian societies. The lack of association between co-residence with spouse/children/other relatives, and the probability of reporting poor self assessed health or the presence of a chronic condition, suggests that living arrangements may not be essential determinant of older adult health. Current government policy promotes co-residence as an important determinant of older adult well-being. Our results counter this argument by suggesting that co-residence may not be related to better older adult health. Finally, ethnic differences in health outcomes are important areas for of policy concern. Controlling for gender, and the other socioeconomic determinants in our models, we find that minority groups continue to report poorer health status compared to the majority Chinese. Policies targeting these ethnic minorities that are sensitive to the cultural interpretations and management of disease would be most effective in raising the health of these minority groups.