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**Results from the Social Environment and Biomarkers
of Aging Study (SEBAS) 2000
Survey Report (Chinese/English)**

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Results from the Social Environment and Biomarkers of Aging Study (SEBAS) 2000

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Executive Summary

During the last half of the 20th century, life expectancy in Taiwan increased by about 20 years (Population Reference Bureau, 2001). As a result, the percentage of people who are age 65 or older has almost quadrupled from 2.5 to 9%, and it is projected to rise to 14% by 2020 (Li, 1994). The health and well-being of this group are important for assessing their quality of life and of interest for determining the demands that will be placed on the public infrastructure in order to meet the needs of this growing population.

This report presents results from the Social Environment and Biomarkers of Aging Study (SEBAS), a nationally representative sample (with the exception of the aboriginal population) of Taiwanese aged 54 and older in 2000. The study collected a broad range of information including not only self-reports of physical, psychological, and social well-being, but also extensive clinical data based on medical examinations and laboratory analyses.

Clinical Measures of Health Risk

Data from the clinical portion of the SEBAS reveals several important points. First, substantial numbers of older Taiwanese¹ exhibit risk factors associated with cardiovascular disease, especially high blood pressure, high LDL and low HDL cholesterol, and excess body mass. Second, comparisons with U.S. data suggest that the health risk profile of the Taiwanese is better than in the U.S., although hypertension may be somewhat more of a problem in Taiwan, particularly among women. Finally, sex differentials are smaller in Taiwan than in the U.S. In contrast to the U.S., where there is generally a male disadvantage, women in Taiwan appear to be at higher risk than men on a variety of indicators including hypertension, cholesterol, blood glucose levels, and body mass index.

Self-Reported Information Regarding Health and Well-being

Self-reported data from the SEBAS provide additional information regarding physical, cognitive, psychological, and social well-being of the older Taiwanese population. In 2000, the three leading causes of death in Taiwan were cancer (malignancies), cerebrovascular diseases (e.g. stroke), and heart disease (Department of Health, Taiwan, 2000). In the SEBAS sample, few older Taiwanese report ever having had cancer or a stroke, but a sizeable minority suffer from heart disease. Diabetes, the fifth leading cause of death in Taiwan, also afflicts a significant proportion of the population. Notably, the prevalence rates for all four of these illnesses are higher among women than men. Consistent with the data from the SEBAS medical examination, more women than men report high blood pressure, a condition that often precipitates more serious illnesses. On the other hand, men are more likely than women to report liver disease, kidney disease, and respiratory illnesses, all of which are among the 10 leading causes of death. Women are more likely to suffer from debilitating conditions such as arthritis, vertebral spurs, and cataracts, which, although not fatal, may limit mobility and increase pain or discomfort. Men are more likely than women to suffer another debilitating condition: gout. Overall, about two-thirds of older Taiwanese currently have a least one of the 12 chronic conditions examined in the SEBAS, while 15% of men and 18% of women have three or more

¹ Throughout this report (unless otherwise stated), we use the term “older Taiwanese” to refer to the population aged 54 and older (i.e. the sampling frame for the SEBAS).

such conditions. Analyses of the validity of self-reported chronic conditions suggest that these illnesses may be under-reported compared with clinical evaluation, although the extent of under-reporting may vary across conditions.

Comparison with data from the United States suggests that the prevalence of cancer, stroke, and heart disease are much lower among older Taiwanese than their American counterparts, although levels of diabetes appear to be slightly higher. The higher prevalence of diabetes is restricted to women, among whom rates are nearly twice as high in Taiwan as in the United States; men in Taiwan have somewhat lower prevalence of diabetes than their American counterparts.

In terms of physical functioning, relatively few older Taiwanese have difficulty performing the basic tasks of everyday life (Activities of Daily Living or ADLs) such as eating or bathing, but the proportion with at least one such limitation is twice as high among women as men (6% vs. 3%, respectively). Difficulty with activities related to independent living (Instrumental Activities of Daily Living or IADLs) such as preparing meals and managing money is much more common, again affecting more women than men (41% vs. 17% with at least one IADL difficulty). An even greater proportion of older Taiwanese have some mobility limitation; three-quarters of women and half of men have difficulty with a physical movement such as standing or running a short distance. Women are also more likely than men to have suffered a recent fall or injury and to have suffered adverse outcomes as a result.

With respect to cognitive functioning, relatively few older Taiwanese demonstrate poor cognitive function (i.e. correctly completing fewer than half of memory, knowledge, and calculation tasks), but the proportion is higher among women (14%) than among men (3%). One-fifth of men and just over one-third of women fail to correctly answer at least two-thirds of cognitive questions, but there is almost no sex difference in the proportion who exhibit very high (i.e. >80% correct) cognitive functioning.

Data on psychological well-being indicate that a substantial proportion of older Taiwanese report high levels of depressive symptoms, especially women (25% vs. 15% of men). Compared with men, women are also much less likely to perceive a high degree of personal mastery (or control) over their own lives, and are twice as likely to express a low level of mastery. In general, the majority of older Taiwanese are satisfied or at least content with their current living situation. Men seem to be most satisfied living with only their spouse, whereas women (even if they are currently married) tend to be more satisfied when living with their children or others.

Few older Taiwanese perceive a high level of stress in their personal or family life, but among both men and women, higher levels of stress are associated with a greater number of functional limitations. The direction of causation is unclear.

With respect to environmental challenges, the vast majority of older Taiwanese report having felt a severe earthquake on September 21, 1999, but much lower proportions report damage to their homes or other property, being temporarily displaced, or suffering injuries as a result of the earthquake. The majority of older Taiwanese report feeling safe in their communities and rarely worry about their own personal or their family's security. Only a small proportion report having been victims of crime or fraud in the year prior to the survey. Nonetheless, relatively large numbers of Taiwanese report poor security in the society as a whole.

The data on health-related behaviors indicate that only about half of older Taiwanese eat a healthy diet and exercise regularly. More than one-third of older males smoke on a daily basis, but relatively small percentages drink alcohol frequently or chew betel nut. Use of these substances is virtually zero among females. Finally, these data suggest that more than half of older Taiwanese do not participate in any organized social activities.

Relatively few older Taiwanese have high levels of health care utilization. Only about a third of older Taiwanese report having had a health examination in the past year, two-thirds of which were paid for by National Health Insurance. About half use at least one long-term medication, while fewer than one in five take multiple medications. Fewer than one in six men and one in eight women say they were hospitalized in the year prior to the survey and a similar proportion report an emergency care visit. The number of hospitalizations (per person) among the elderly (age 65+) population is virtually identical in Taiwan and in the United States.

In terms of socioeconomic status, older Taiwanese perceive themselves as ranking lower than other people in Taiwan. On a scale of 1 to 10, the vast majority rank themselves at 5 or lower, where 10 indicates those who are best off in society. Multivariate results suggest that measures of objective status such as education, income, and occupation are significant determinants of the subjective assessments. Social factors such as ethnicity and presence of sons also influence perception of social position. Education, which continues to be fundamentally important in determining social status in Taiwan, is positively related to functional mobility among both men and women. Older Taiwanese men with higher levels of education and women whose husbands have attained higher levels of education have fewer functional limitations than their counterparts. Moreover, among women, education (of their spouse) is related to lower levels of perceived stress, whereas among men there is no clear relationship between their own education and stress level.

Finally, when asked to rate their overall health status, nearly one-quarter of older Taiwanese men and one-third of the women report their current health status as “not so good” or “poor”. Because this measure incorporates multiple domains of health, these results may be more indicative of overall well-being among older Taiwanese than observed physical and mental condition. Analyses suggest that self-ratings of health are related not only to physical and mental health, but also to health-related behaviors, social participation, and perceptions of relative socioeconomic status.

Policy Implications

Data from the SEBAS reveal that the majority of older Taiwanese are reasonably healthy, as indicated by various health risk factors, prevalence of chronic health conditions, physical functioning, cognition, psychological well-being, levels of perceived stress, and self-reported health status. By many measures, older Taiwanese exhibit fewer health risk factors than their U.S. counterparts with whom they share similar life expectancy and the same leading causes of death.

Nonetheless, a substantial proportion of this population experiences conditions that may diminish their well-being and quality of life. These results indicate a need to focus attention in Taiwan on conditions that are treatable or amenable to change (e.g. hypertension, high cholesterol, excess body mass, and depression), and that are likely to reduce risk of future illness

and mortality. The data also suggest that many older Taiwanese may benefit from a healthier diet, more regular exercise, and lower levels of smoking (among men).

On the whole, these data suggest that older Taiwanese women are worse off than men in terms of clinical risk factors, physical health, cognition, and psychological well-being. These sex differences are not simply the result of an older age distribution among females relative to males in the sample. Yet, this female disadvantage may seem counterintuitive given that overall life expectancy is higher for women than men (Ministry of the Interior, Taiwan, ROC, 2004). Researchers attempting to explain this paradox have demonstrated that a substantial part of sex differences in mortality can be explained by differences in the distribution of chronic conditions (Case and Paxson, 2004). In many countries, women are more likely than men to suffer from health conditions that—while they may cause considerable physical discomfort and diminished quality of life—are not necessarily fatal. For example, older women in Taiwan are more likely than men to suffer from arthritis or rheumatism, functional limitations, poor cognitive function, and depressive symptoms.

Nonetheless, in this sample of older Taiwanese, we also find a female disadvantage for life-threatening conditions such as diabetes and heart disease. Other studies have found little evidence that sex differences in self-reported morbidity are the result of greater willingness on the part of women to report such conditions (Case and Paxson, 2004; MacIntyre et al., 1999). Moreover, reporting bias cannot account for sex differences in the clinical indicators. Data from the physical examination show that women are more likely than men to exhibit risk factors known to be associated with cardiovascular disease such as hypertension, high cholesterol, elevated blood glucose levels, and excess body mass. A study in the United States found that among those who reported having cardiovascular disease or certain lung disorders, men had higher subsequent mortality than women, suggesting that men suffer more severe forms of these conditions (Case and Paxson, 2004). Thus, given the presence of a particular risk factor or health condition, women in Taiwan may enjoy a greater likelihood of survival than men.

Even if a health condition is not life-threatening, it can still have important implications for one's quality of life and for the burden to the family and society in caring for the elderly population. Therefore, health policy and programs should aim not only to improve survival, but to maximize overall well-being of the older population.

Chapter 1 : Introduction

During the last half of the 20th century, Taiwan has experienced rapid demographic, social, and economic changes. Taiwan has been transformed from a rural, agricultural society to a highly urbanized, industrial one: the percentage of the population living in cities nearly tripled, the percentage of the labor force engaged in agriculture decreased from 56 to 14%, and per capita income grew more than nine-fold over this period (Hermalin, Liu, & Freedman, 1994). Between 1952 and 2000, life expectancy increased by about 20 years, whereas total fertility dropped by nearly five births (Population Reference Bureau, 2001). As a result, the percentage of people who are age 65 or older has almost quadrupled from 2.5 to 9%, and it is projected to rise to 14% by 2020 (Li, 1994). The health and well-being of this group are important for assessing their quality of life and of interest for determining the demands that will be placed on the public infrastructure in order to meet the needs of this growing population. A better understanding of the overall well-being of older Taiwanese is needed for developing future social and health policies.

This report presents results from the Social Environment and Biomarkers of Aging Study (SEBAS), a nationally representative sample (with the exception of the aboriginal population) of Taiwanese aged 54 and older in 2000. The study collected a broad range of information including not only self-reports of physical, psychological, and social well-being, but also extensive clinical data based on medical examinations and laboratory analyses. As a result, the SEBAS provides a wealth of information regarding the health and well-being of older Taiwanese.

In Chapter 2, we describe the design of the study including the sampling procedure and the protocol for collecting the clinical data. Chapters 3 through 10 present information related to the health and well-being of older Taiwanese (age 54+). We examine numerous indicators of physical health status in this report, but well-being encompasses more than simply physical condition and the absence of disease. A broad definition of health comprises mental, psychological, and social aspects as well. Therefore, this report includes data regarding cognitive function, psychological well-being, stress and environmental challenges, health-related behaviors, and social participation. In addition, we examine health services utilization, which may be of particular interest to those concerned with health care policy. Given that the National Health Insurance Program was introduced on March 1, 1995, these data provide an opportunity to assess the coverage of preventative health examinations among the older population five years after the start of universal health insurance. We also investigate socioeconomic status and how it relates to selected measures of well-being. Finally, we explore the respondents' own assessments of their overall health status, an indicator that has been shown to be a powerful indicator of future mortality and morbidity.

Chapter 2 : Survey Design and Exam Protocol

The Social Environment and Biomarkers of Aging Study (SEBAS) is an extension of the Survey of Health and Living Status of the Near Elderly and Elderly in Taiwan initiated under the National Institute of Family Planning (NIFP, now reorganized as the Bureau of Health Promotion of the Department of Health) and in collaboration with the Population Studies Center and the Institute of Gerontology, University of Michigan. The SEBAS builds on this 10-year longitudinal survey by including collection of biomarkers and a medical examination on a subsample of the participants in the full survey. These clinical data supplement the data provided in the SEBAS interview, which include self-reported measures of health, well-being, social environment, and life challenges. This project was approved for human subjects concerns by the institutional review boards at Princeton University, RAND, Georgetown University, the University of California-Los Angeles, and the National Institute of Family Planning, Taiwan.

Sampling Design

The Survey of Health and Living Status of the Elderly began in 1989 with a nationally representative sample – including the institutionalized population – of 4049 persons aged 60 and older (response rate: 92%).² The sample was drawn as a multi-stage probability sample: 1) 56 townships (primary sampling units or PSUs) were randomly selected, 2) within each PSU, blocks (*lins*) were randomly selected, and 3) within each block, two eligible respondents were selected. Both PSUs and blocks were selected with probabilities proportional to size of the population in the sampling unit (for more details see: Hermalin, Liang, and Chang, 1989).

In 1996, the survey was expanded to include a sample of 2462 near elderly persons aged 50 to 66. Respondents were drawn from 53 PSU townships, 40 of which were the same as those for the 1989 elderly sample. Thus the 1996 survey contains a sample of all Taiwanese aged 50 and above, who were then re-interviewed in 1999. Among the 4440 surviving respondents interviewed in 1999, most lived in one of the original PSUs, but slightly more than one in ten had moved to some other (non-PSU) township.

In 2000, a national sub-sample of respondents to the 1999 wave of the survey was selected randomly for the Social Environment and Biomarkers of Aging Study (SEBAS). The sampling plan was an extension of the original design implemented in 1989, based on a three-stage sampling plan with townships as the primary sampling units (PSUs). The sampling plan for SEBAS ensured that movers between the initial survey date (1989 or 1996) and the most recent one (1999) were included in the sampling frame by either assigning them to an existing PSU or by creating additional ones; of the 4,440 respondents in 1999, 509 were no longer residing in their original PSU. All of the resulting sampling units (original and new PSUs) were stratified into the following strata: districts of large cities, smaller cities, urban towns and rural towns. Sampling units were drawn with probabilities 1/2 for large and small cities and 1/3 for urban and rural towns. A total of 27 original PSUs and 10 new townships were chosen. All respondents residing in a given PSU were selected for interview. Because the 1996 survey,

² The sample excludes aboriginal areas of Taiwan (i.e. 30 mountainous areas with a largely aboriginal population were excluded from the sampling frame).

which first included the near elderly sample, under-sampled these new entrants relative to the elderly, the 2000 sample also over-represents the elderly.

Although 1713 respondents were selected for SEBAS, we attempted to contact only 1698 of these; the remaining 15 respondents lived in non-PSU townships that were too far from any of the selected hospitals where physical examinations would be conducted. The SEBAS was fielded between July and December, 2000. A total of 1497 respondents provided interviews (93% of elderly survivors and 91% of near elderly survivors). More than 90% of these interviews were completed by the respondent, but 59 involved assistance from a proxy and another 81 were completed solely by a proxy (e.g. spouse, son, daughter). With the exception of Table 2-2, all data shown in tables and figures are based on weighted analyses that adjust for over-sampling by urban residence and age group.

Individual Interview

The SEBAS survey included a face-to-face interview conducted by a local public health nurse who was well-known and highly-respected in the local area. The interview comprised information regarding chronic conditions, physical functioning, psychological well-being, cognitive capacity, health services utilization, social networks and support, stressful life events, socioeconomic status, and demographic characteristics.

At the end of the interview, the interviewer evaluated the respondent's health condition in order to determine whether he or she was eligible for the health examination (according to a set of defined criteria, see Table 2-2). Those eligible were asked to participate in the health examination at a nearby hospital. The interviewer explained the processes involved, scheduled the examination, and arranged transportation if needed.

Medical Examination and Collection of Biomarkers

Several months before the beginning of the fieldwork, the NIFP staff identified hospitals that were likely candidates for participation in the survey (e.g. had a good reputation, were accessible, and had the interest and capacity to participate in the study) and were in or near a selected PSU; ultimately, 24 hospitals were selected for participation (some serving more than one PSU). The evening before the scheduled hospital appointment, a NIFP staff member together with a public health nurse delivered the urine collection container to the respondent's home, explained the proper procedures for urine collection, and answered questions. They also provided the respondent with written instructions regarding the 12-hour urine collection, obtained written informed consent for the health examination, and reminded the respondent not to eat anything from midnight until after the medical examination. The 12-hour collection period is important because neuroendocrine levels, such as cortisol, show considerable diurnal variation. An overnight sample minimizes person-to-person variation that would be related to differences in activities during the day and provides an integrated measure of baseline neuroendocrine levels.

On the morning of the hospital appointment, a member of the NIFP staff met the participant at his or her home, collected the 12-hour urine specimen, and accompanied the participant to the hospital. During the hospital visit, a team of seven staff members coordinated the respondent's visit, processed the blood and urine samples, administered part of the health examination record, and processed the necessary forms. Table 2-1 provides a summary of the biomarkers and clinical measures collected during the SEBAS. Participants were asked about

their health history, family disease history, health-related behaviors, and current long-term medications. A staff member also confirmed that the respondent had followed the urine collection protocol, had fasted since midnight, and did not have any contraindications to blood drawing. In addition, the staff member re-interviewed the respondent in order to obtain responses to questions that remained incomplete from the initial interview and to resolve inconsistencies detected when the staff reviewed and edited the questionnaires the previous evening. Next, the respondent provided a spot urine sample, a phlebotomist drew a blood sample, and a registered nurse measured the respondent's height, weight, waist and hip circumference, and blood pressure. Two blood pressure readings (one minute apart) were taken at least 20 minutes after the respondent arrived at the hospital using a mercury sphygmomanometer (on the right arm) with the respondent in a seated position. Finally, a physician performed a medical examination including a third blood pressure reading, an abdominal ultrasound, and health education counseling. For the purposes of analysis, blood pressure is derived from the average of the first two readings. Subsequent to the examination, participants were provided with breakfast, were given a small gift of nutritional supplements, and were accompanied back to their homes.

Table 2-1. Biomarkers and Clinical Measures Collected During the SEBAS 2000

Measure
<u>Physical Examination</u>
Anthropometry: height, weight, waist and hip circumference
Systolic and diastolic blood pressure (3 readings)
Examination of chest, heart rate, breathing, breasts, abdomen, arms, legs, lymph & thyroid glands for abnormalities (Similar to National Health Insurance Exam)
Abdominal ultrasound (liver, pancreas, gallbladder, kidneys)
<u>Fasting Blood Sample</u>
Total and HDL cholesterol
Glycosylated hemoglobin
DHEA-S
APOE genotype
Immune function and growth factor: IL-6, IGF-1,
Other routine blood tests (e.g. blood cell counts, hemoglobin, glucose, triglycerides)
<u>12-Hour Urine Sample</u>
Cortisol
Norepinephrine
Epinephrine
Dopamine
Creatinine

On each day of the fieldwork that involved physical examinations, a staff person from Union Clinical Laboratories (UCL) collected the blood and urine specimens from the hospitals by noon. UCL took responsibility for immediate shipment of the specimens to their base in Taipei, followed standard laboratory protocols for conducting assays, and provided the results to the NIFP within two weeks. In addition to the routine standardization and calibration tests performed by UCL, blind duplicate samples (contributed by staff) were submitted to UCL periodically throughout the fieldwork and a further set of duplicates were sent to Quest Diagnostics in the United States (U.S.) for analysis. Data from these duplicates indicate high

inter- and intra-lab reliability, with intraclass correlations of 0.80 or higher for duplicates sent to UCL and inter-lab correlations of 0.76 or higher between results from UCL versus Quest Diagnostics.

Several weeks after the fieldwork, respondents received the results of their health examination (i.e., the results from standard tests based on the blood and random urine specimens and findings from the physical examination). Persons whose results were abnormal and required immediate attention were strongly encouraged to see a doctor for further examination and were informed about health counseling available at the hospital.

Among the 1497 respondents to the initial interview, 1023 participated in the physical examination (75% of the near elderly and 61% of the elderly). As shown in Table 2-2, 7% of respondents were ineligible for the exam owing to their health condition. Among the 24% who declined to participate, the principal reasons included: the respondent felt that he or she was healthy and did not need an exam, the exam was too much trouble, the respondent just had a health exam, and the respondent had no free time or was out of town during the several day period during which exams were offered. Among participants, compliance was extremely high: all but 10 individuals followed the urine protocol, provided a sufficient volume of blood suitable for analysis, and completed the medical exam.

The clinical data provide measures of known risk factors for cardiovascular disease, hypothalamic-pituitary-adrenal (HPA) axis activity, and sympathetic nervous system (SNS) activity. The specific markers selected for inclusion have well-established associations with stressful experiences and with chronic illness – including cardiovascular disease, diabetes mellitus, memory impairment, and depression – and are comparable to measures in two recent population-based³ surveys in the U.S. (Seeman et al., 1997; Singer & Ryff, 1999). One genetic marker, Apolipoprotein E (APOE), was also obtained; the literature suggests that the $\epsilon 4$ allele of this gene may represent a major risk factor for late-onset Alzheimer's disease and ischemic heart disease (Ewbank, 1999).

Predictors of Participation in the Medical Examination

A multivariate analysis of the predictors of participation in the medical examination revealed that even in the presence of controls for self-reported health status and functional ability, respondents aged 70 and older were much less likely than younger persons to participate (Goldman et al., 2003). Sex, level of education, and employment status were not significantly related to participation. Persons living with someone other than a spouse, child, or grandchild were less likely to take part in the exam than those living with children or grandchildren, whereas involvement in social activities was positively associated with participation. Time since the most recent prior health exam was not significantly related to participation. Consistent with the survey protocol, limitations in activities of daily living were negatively related to participation in the physical exam. Respondents reporting themselves to be in excellent health – not those in fair or poor health – were also less likely to participate than those reporting average health. Because of higher non-participation rates among both the healthiest and the least healthy individuals, persons who received the medical exam reported the same general health status, on average, as those who did not (2.94 for non-participants and 2.93 for participants, based on the 5-point scale for general self-rated health status). These results

³ These studies were not nationally representative, although they were population-based.

suggest that, in the presence of controls for age, estimates derived from clinical information are unlikely to be seriously biased (Goldman et al., 2003).

Table 2-2. Reasons for not participating in health examination and collection of biomarkers

Reason for non-participation	N	Percent of Interview Sample
<u>Not eligible for health examination</u> †	111	7.4
Living in an institution	10	0.7
Seriously ill	61	4.1
Catheter or diaper	23	1.5
On kidney dialysis	7	0.5
Other health condition that precludes blood drawing	33	2.2
<u>Refused to participate</u> ‡	363	24.2
Unwilling or unable to have health examination	330	22.0
Unwilling or unable to have blood drawn	240	16.0
Unwilling or unable to collect urine	218	14.6
<i>Reason(s) unwilling or unable to participate:</i>		
Will be out of town during scheduled examination period	23	1.5
Has no time during scheduled examination period	57	3.8
Has just received an examination	84	5.6
Has regular or frequent examinations	75	5.0
Thinks s/he is healthy and does not need examination	102	6.8
Respondent's family doesn't feel the need	36	2.4
Too old or difficulty moving	26	1.7
No one to accompany him/her	10	0.7
Afraid of having blood drawn	32	2.1
Too much trouble	86	5.7
Afraid of riding in a car/suffers from car-sickness/ doesn't want to go out	11	0.7
Worried about negative results from exam	15	1.0
Other reason	34	2.3
Did not give a reason	2	0.1
Would participate in future if medical staff came R's house	99	6.6
Total number of non-participants	474	31.7

† Respondents may have more than one health condition that makes them ineligible for health examination.

‡ The 363 refusals may have provided multiple reasons for refusing to participate.

Chapter 3 : Clinical Measures of Health

This chapter focuses on standard clinical risk factors that are associated with cardiovascular disease, cerebrovascular disease (stroke), and diabetes mellitus, all of which are among the leading causes of death in Taiwan (Department of Health, Taiwan, 2002). We use data from the physical examination and collection of biomarkers to examine the prevalence of selected risk factors among older persons (age 54+) in Taiwan. In the second section of this chapter, we use comparable data from the United States to make comparisons with Taiwan. Finally, we discuss sex differences in clinical measures across the SEBAS sample and two similar studies in the United States.

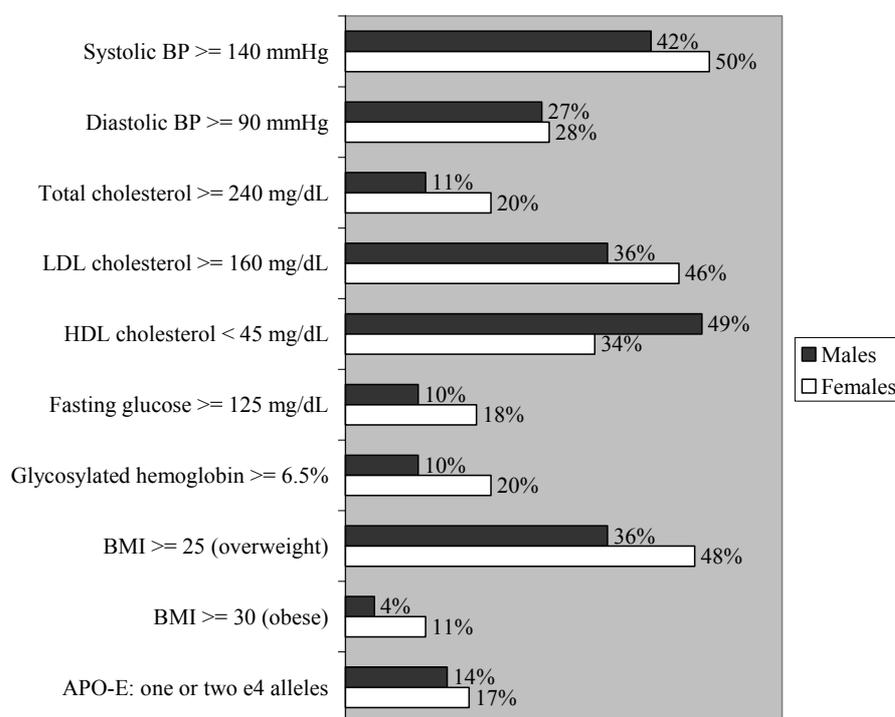
Prevalence of Clinical Risk Factors

Hypertension – defined as systolic blood pressure greater than or equal to 140 mmHg or diastolic blood pressure greater than or equal to 90 mmHg – is a risk factor for heart disease, stroke, and kidney disease. Data from the SEBAS indicate that nearly half of older Taiwanese represented by the study have high systolic blood pressure, and more than one-quarter have high levels of diastolic blood pressure (Figure 3-1). Given the clinical setting (and in particular, a hospital and doctor with whom the respondent may be unfamiliar), blood pressure readings may be inflated because of “white-coat hypertension”, however these percentages may represent a public health hazard.

High cholesterol – in particular, increased levels of low-density lipoprotein (LDL) cholesterol and decreased levels of high-density lipoprotein (HDL) cholesterol – are also associated with increased risk of heart disease and stroke. Among these older Taiwanese, about one in ten males and two in ten females exhibit high total cholesterol (defined as 240 mg/dL or higher). Yet, more than one-third of males and nearly half of females present high LDL or “bad” cholesterol (defined as 160 mg/dL or higher). About half of males and one-third of females have low HDL or “good” cholesterol (defined as less than 45 mg/dL).⁴

High levels of fasting glucose and glycosylated hemoglobin are both associated with diabetes mellitus, which is itself a risk factor for heart disease, stroke, and memory deficits. Impaired fasting glucose (defined as 125 mg/dL or greater) may indicate a pre-diabetic condition. Glycosylated hemoglobin is a measure of the amount of glucose attached to hemoglobin in the blood and is a better indicator of blood sugar levels over a longer period of time (2-3 months prior to the test); a value of 6.5% or greater may indicate need for diabetic treatment (Davidson et al., 1999; Nordenson, 2001). Among older Taiwanese, about one-tenth of men and one-fifth of women show high levels of fasting glucose and glycosylated hemoglobin (Figure 3-1).

⁴ A lower clinical cutoff (<35 mg/dL) is often used for men; using this alternative definition, only 16% of men present low HDL cholesterol.

Figure 3-1. Prevalence of Clinical Risk Factors by Sex, SEBAS 2000

Obesity is related to increased risk of high blood pressure, high cholesterol, heart disease, type II diabetes, and other long-term illnesses. The body mass index (BMI) – calculated as weight in kilograms divided by height in meters squared – is a widely used indicator of obesity. Among these older Taiwanese, more than one-third of males and nearly half of females meet the standard definition of overweight (BMI of 25 or greater). Nonetheless, only 4% of males and 11% of females are classified as obese (BMI of 30 or greater). The sex differences in clinical risk factors (e.g. systolic blood pressure, total cholesterol, glucose tolerance, obesity) are not simply the result of an older age distribution among females relative to males in the sample.

The apolipoprotein-E (APOE) gene has three common alleles (ϵ 2, ϵ 3, and ϵ 4); each person carries two copies. The literature suggests that those with at least one copy of the ϵ 4 allele may have increased risk of ischemic heart disease and Alzheimer's disease, and the risk is even greater for those with two copies. These data indicate that less than one-fifth of Taiwanese carry the ϵ 4 allele (Figure 3-1).

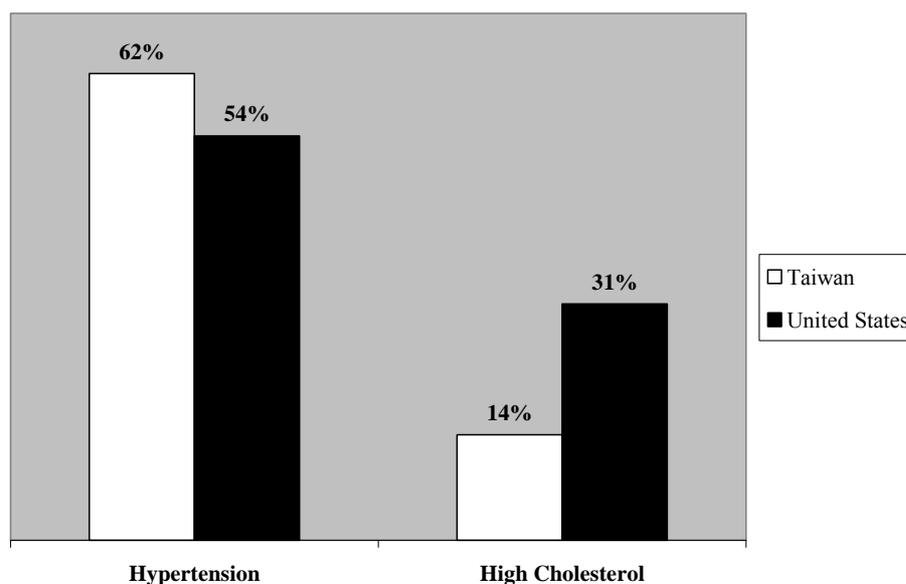
Comparisons with the United States

Life expectancy is similar in Taiwan and the United States (about 77 years in the U.S. versus 75 in Taiwan in 1999), and the leading causes of death among the elderly in Taiwan have been the same chronic illnesses affecting their American counterparts. Yet, there are important social and cultural differences between Taiwan and the U.S. In Taiwan, the traditional and (for many elderly people) preferred living arrangement at older ages is with extended family (typically the oldest son), whereas in the U.S. most elderly live alone or with a spouse. Moreover, respect for the elderly is deeply embedded in Chinese culture. In Taiwan, age has

historically been associated with greater authority, greater control over decisions, and improved treatment by children and other relatives as well as strangers. Yet these traditional values have come under pressure as Taiwan has industrialized and increasingly been exposed to Western values and culture. Thus, comparisons between Taiwan and the U.S. may provide insight into the role of social and cultural factors in affecting health risk factors.

For the purposes of these comparisons, hypertension is defined as either elevated blood pressure (systolic pressure ≥ 140 or diastolic pressure ≥ 90 mmHg) *or* taking antihypertensive medication. High cholesterol is defined as ≥ 240 mg/dL. The U.S. data come from the 1988-94 National Health and Nutrition Examination Survey (NHANES III); the estimates are age and sex standardized to match the distribution of the weighted Taiwan sample. In order to provide further comparability with the U.S. data, we also restrict the SEBAS sample to those aged 55 and older and use only the first blood pressure reading.⁵ The estimates shown in Figure 3-2 suggest that the proportion of the older population with hypertension is somewhat higher in Taiwan than in the U.S. (62% vs. 54%).⁶ On the other hand, the Taiwanese are much less likely to have high cholesterol than their U.S. counterparts (14% vs. 31%).

Figure 3-2. Hypertension and High Cholesterol, Taiwan and the United States



Source of U.S. Data: National Center for Health Statistics. (2001). Health, United States, 2001: with Urban and Rural Chartbook (Table 67 & 68, data from 1988-94). Hyattsville, MD: NCHS. Age and sex standardized to Taiwan SEBAS distribution.

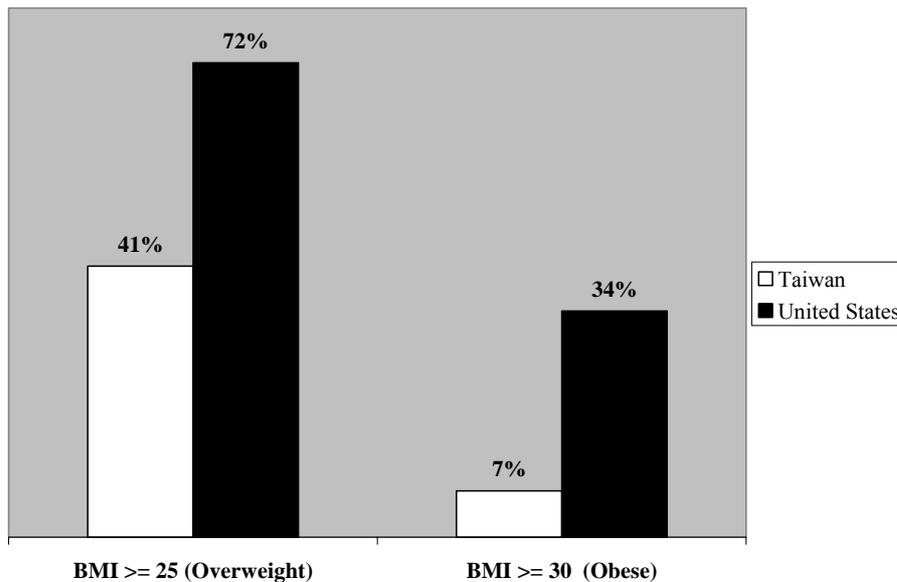
The U.S. data on BMI come from the 1999-2000 NHANES; estimates are age and sex standardized using the weighted Taiwan sample distribution (age 55+). The Taiwanese are

⁵ The published tabulations from the NHANES III are based only on the first blood pressure reading in order to allow consistent comparisons with earlier waves of the NHANES (when only one reading was taken).

⁶ The proportion of older Taiwanese defined as having hypertension is reduced to 57% if only the second blood pressure reading is used.

much less likely be overweight or obese than the Americans. Among older Taiwanese, about four in ten are overweight compared with nearly three-quarters in the U.S., and only 7% are obese versus more than one-third in the U.S. (Figure 3-3).

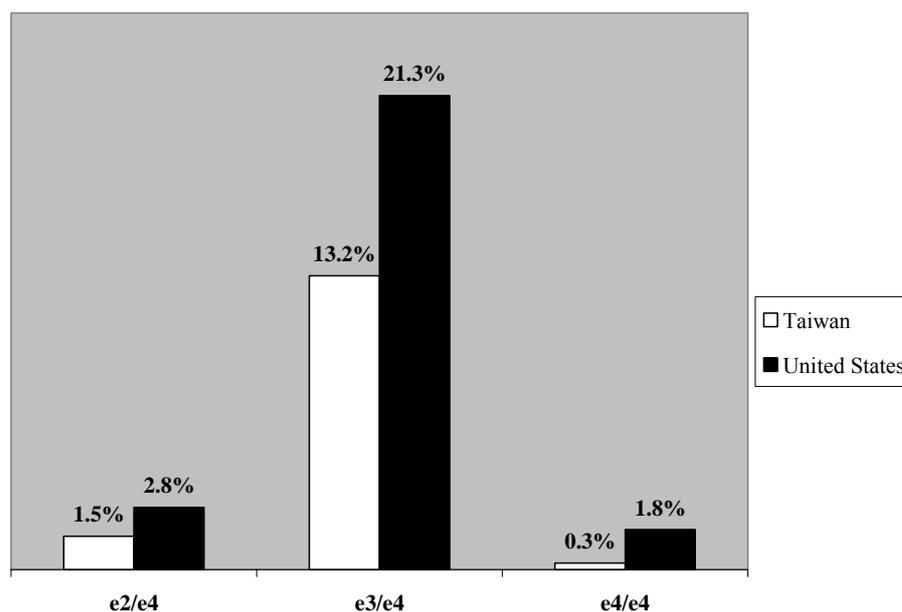
Figure 3-3. Body Mass Index (BMI), Taiwan and the United States



Source of U.S. Data: National Center for Health Statistics. (2002). Health, United States, 2002: with Chartbook on Trends in the Health of Americans (Table 70, data from 1999-2000). Hyattsville, MD: NCHS. Age and sex standardized to Taiwan SEBAS distribution.

Data on the APOE genotype in the U.S. come from a study by Farrer et al. (1997); we use their estimates for whites in the control group for comparison. Estimates presented for a large number of samples from diverse populations suggest that Chinese populations have relatively low frequencies of the APOE ϵ 4 allele (Gerdes et al., 1992). This finding is supported by the data in Fig 3-4 which reveal a much higher frequency of the ϵ 4 allele in the U.S. than in Taiwan (overall, 26% versus 15%, respectively).

Figure 3-4. APOE Genotype, Taiwan and the U.S.



Source of U.S. Data: Farrer et al., 1997. JAMA 278(15):1352. Used data for whites in the control group.

Sex Differences in Clinical Biomarkers

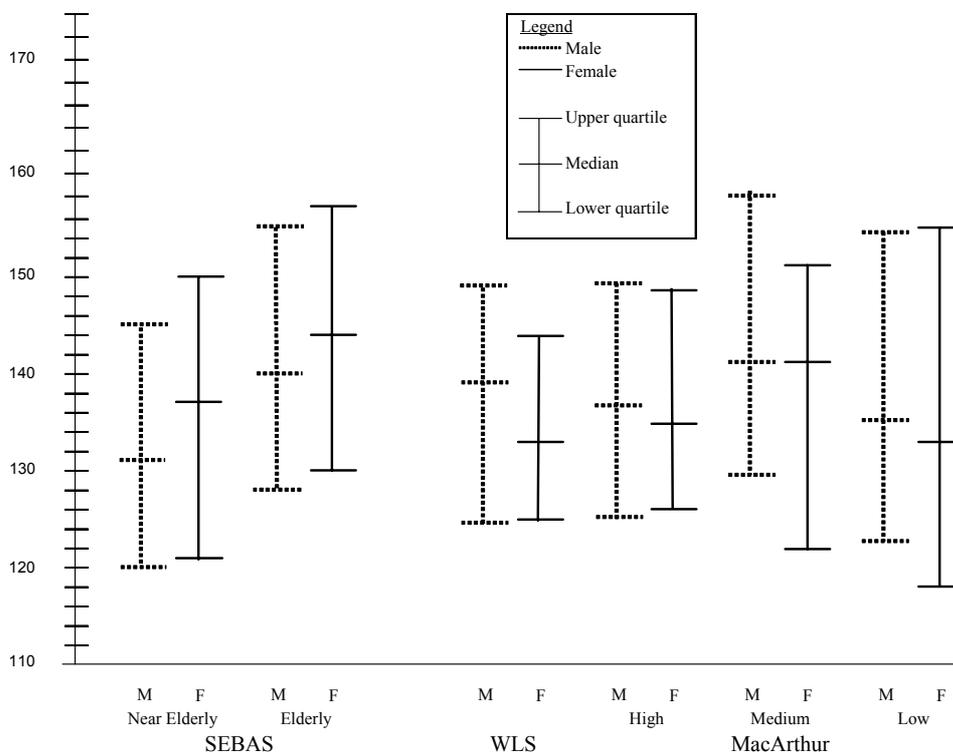
Previous medical research on Western populations has demonstrated important differentials by sex in clinical biomarkers. Research in Western countries has generally found that cardiovascular risk factors are often higher among men than women. Given that the social structure in Taiwan differs from the West, there may not be the same difference between men and women on these biomarkers.

Although men suffer higher death rates than women from ischemic heart disease and diabetes in both Taiwan and the U.S., the rates for men and women are more similar in Taiwan than in the U.S. (Goldman et al., 2004; Department of Health, Taiwan, ROC, 1996, 1997, 1998, 1999; U.S. Census Bureau, 2001; NCHS, 2003). Thus, it appears that with respect to mortality from these causes, Taiwanese women have less of an advantage (relative to men). Consequently, we might ask whether sex differentials in the associated biomarkers are also correspondingly smaller in Taiwan compared with the U.S.

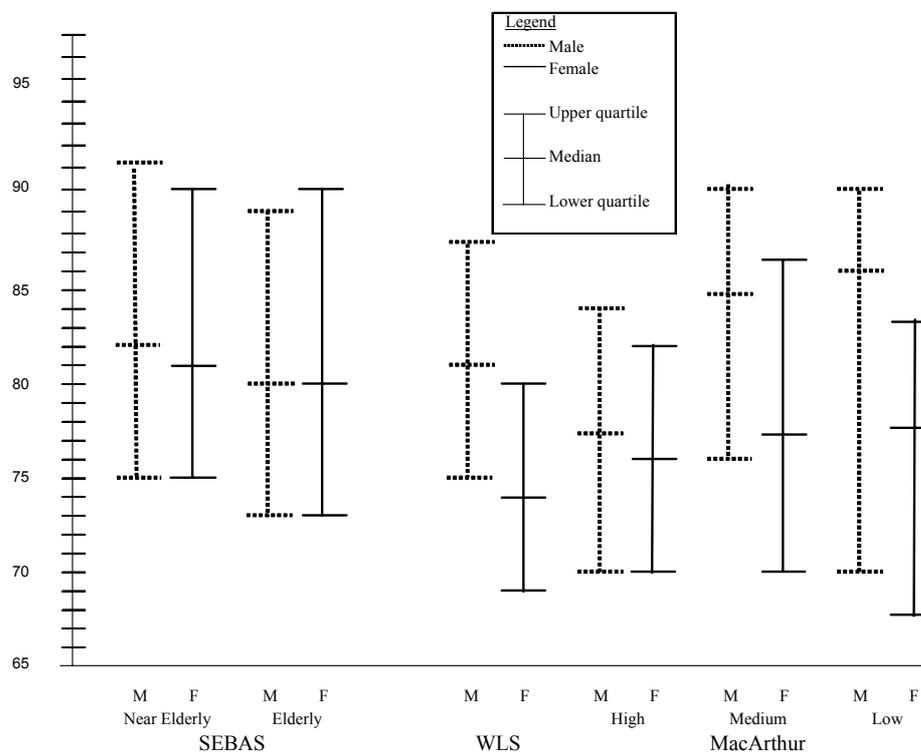
To compare sex differentials based on the Taiwan SEBAS sample to U.S. differentials, we use data from the 1997 wave of the Wisconsin Longitudinal Study (WLS) and the 1988-89 MacArthur Studies of Successful Aging. The WLS includes 95 participants aged 58-59 (Sewell et al., 2002). The MacArthur sample includes persons aged 70-79 subdivided into three groups on the basis of physical and cognitive function: 731 high, 54 medium, and 41 low functioning (Berkman et al., 1993). Estimates from SEBAS are calculated separately for the near elderly (54-70) and the elderly (71 and over) in order to correspond better with the age coverage in the WLS and the MacArthur studies, respectively.

Figures 3-5 through 3-10 present sex differentials across samples for a variety of cardiovascular risk factors (Goldman et al., 2004). For each biomarker, we present the values at the lower quartile (the 25th percentile), the median (the 50th percentile), and the upper quartile (the 75th percentile) within a given sample. The data shown in Figures 3-5 and 3-6 suggest that Taiwanese women have somewhat higher systolic and diastolic blood pressures than American women. In fact, among the Taiwanese, women appear to have somewhat higher levels of systolic blood pressure than men, whereas the opposite tends to be the case in the U.S. For diastolic blood pressure, the data show a similar male disadvantage in the U.S. (i.e. higher levels among men than women), but little sex differential in Taiwan.

Figure 3-5. Sex Differences in Systolic Blood Pressure



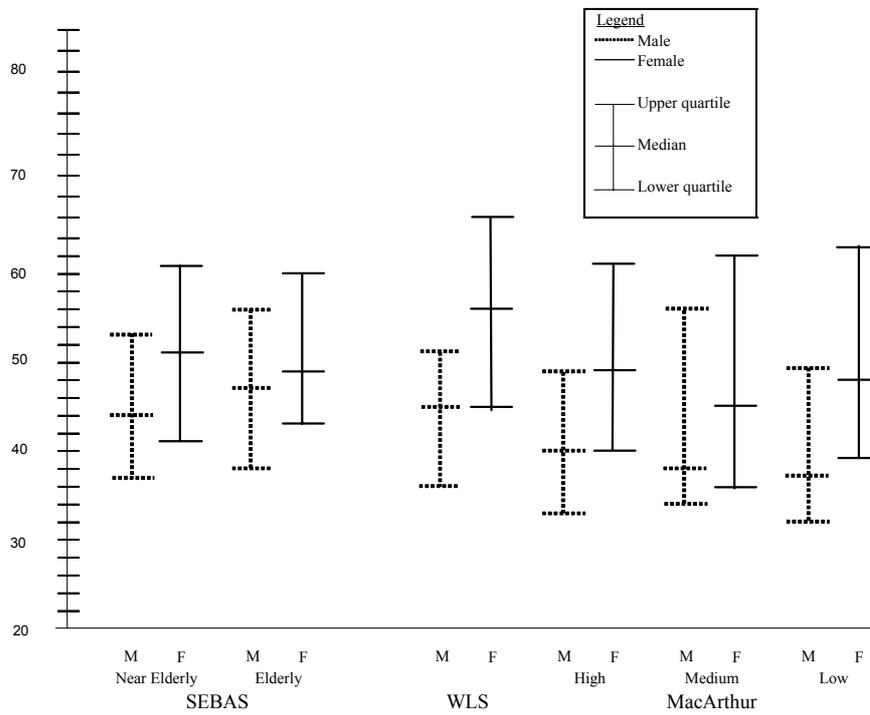
Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

Figure 3-6. Sex Differences in Diastolic Blood Pressure

Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

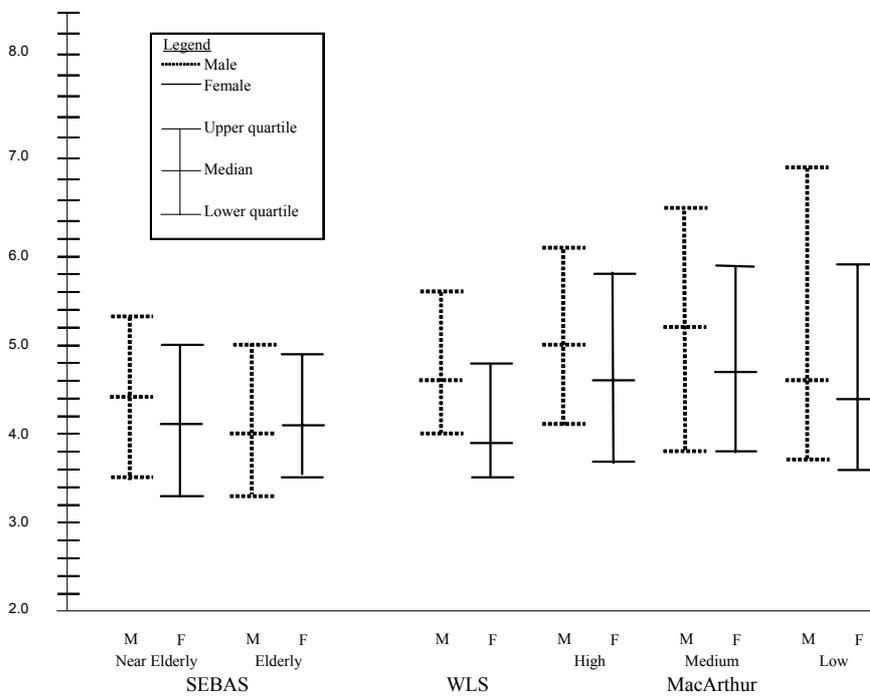
Figures 3-7 and 3-8 present sex differentials in HDL cholesterol and the ratio of total to HDL cholesterol. Unlike the other risk factors we present here, HDL cholesterol is a positive indicator. That is, high levels indicate a health advantage. On the other hand, having high total cholesterol relative to HDL cholesterol confers a health risk. In general, these data reveal a male disadvantage (i.e. lower levels of HDL and higher ratios of total to HDL among men compared with women) in both countries, but the sex differential is smaller in Taiwan.

Figure 3-7. Sex Differences in HDL Cholesterol



Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

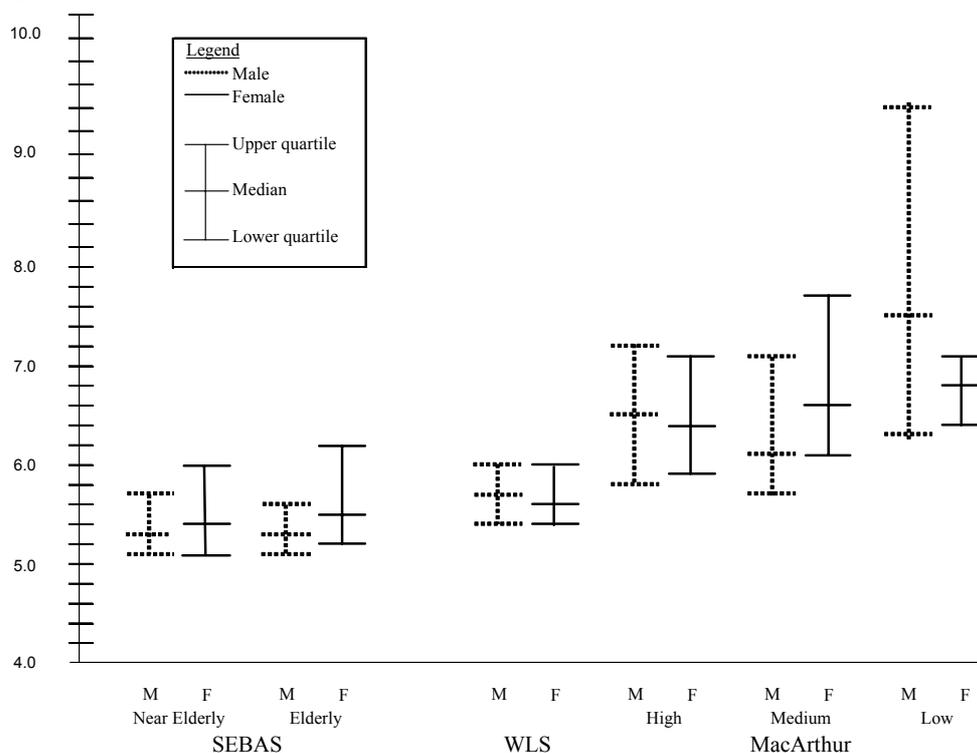
Figure 3-8. Sex Differences in Ratio Total/HDL Cholesterol



Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

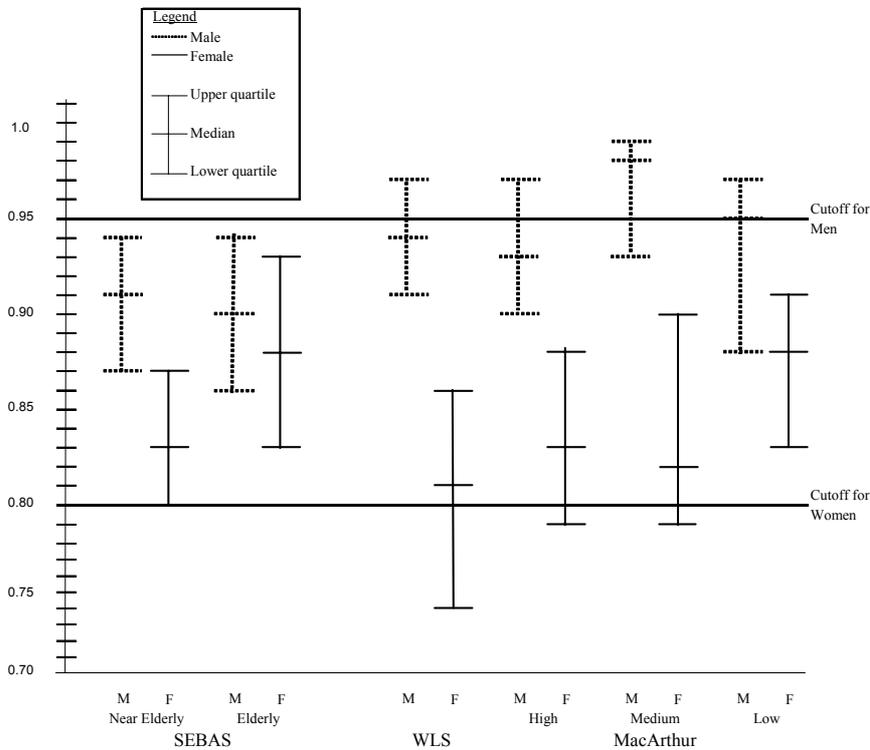
American men and women generally have higher values of glycosylated hemoglobin than their Taiwanese counterparts (Figure 3-9). Yet, there does not appear to be any consistent pattern in sex differences in either country.

Figure 3-9. Sex Differences in Glycosylated Hemoglobin



Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

Whereas American men tend to have higher waist-hip ratios than their Taiwanese counterparts, American women have somewhat lower ratios than Taiwanese women (Figure 3-10). In both countries, waist-hip ratios are higher among men than women, but a higher cutoff is typically used for men (> 0.95) than women (> 0.80) in defining cardiovascular risk. With those cutoffs in mind, these data suggest that women tend to be at higher risk than men in both countries, but especially in Taiwan. Among Taiwanese men, the interquartile range falls completely below the cutoff of 0.95, whereas for women it falls completely above the cutoff of 0.80. In contrast, a substantial proportion of both men and women fall above the cutoffs in the U.S.

Figure 3-10. Sex Differences in Waist-Hip Ratio

Source: Adapted from Figure 1(A) published in Goldman et al. (2004). Reproduced with permission.

Overall, four of these six cardiovascular markers reveal a male disadvantage in the U.S., whereas sex differences in Taiwan are less consistent and considerably smaller. Only two of the measures (total/HDL cholesterol and HDL cholesterol) indicate a consistent male disadvantage in Taiwan, and even then, the male-female differential is substantially smaller than in the U.S. Furthermore, data for systolic blood pressure, glycosylated hemoglobin, and possibly waist-hip ratio (depending on how one defines risk) suggest a female disadvantage in Taiwan.

Summary

An examination of clinical risk factors among a sample of older adults in Taiwan reveals several important points. First, substantial numbers of older Taiwanese exhibit risk factors associated with cardiovascular disease, especially high blood pressure, high LDL and low HDL cholesterol, and excess body mass. Second, comparisons with U.S. data suggest that the health risk profile of the Taiwanese is better than in the U.S., although hypertension may be somewhat more of a problem in Taiwan, particularly among women. Finally, sex differentials are smaller in Taiwan than in the U.S. Whereas in the U.S. there is generally a male disadvantage, we find many examples of a female disadvantage in Taiwan.

These results indicate a need to focus attention in Taiwan on risk factors that are treatable or amenable to change, and that are likely to reduce risk of future illness and mortality. Moreover, the data reveal a particular need to target efforts towards women, who appear to be at

higher risk than men on a variety of indicators including hypertension, cholesterol, blood glucose levels, and body mass index.

Chapter 4 : Self-Reported Physical Health

In this chapter, we examine physical aspects of health among older Taiwanese. We use data from the individual interview portion of the SEBAS to describe physical health as reported by respondents. We also use data from the physical examination to assess the accuracy of self-reports. Finally, we compare the prevalence of selected illnesses and conditions among older Taiwanese to that of their U.S. counterparts.

Chronic Illness

Table 4-1 shows the percentage of older Taiwanese who report *ever* having had selected illnesses and conditions. The percentage who report *currently* having these same conditions is displayed in the second column.

Table 4-1. Percent Who Ever Had and Who Currently Have Selected Illnesses or Conditions

Illness or condition	Ever had (%)		Currently have (%)	
	Males	Females	Males	Females
Cancer or malignant tumor	1.8	3.2	0.4	1.5
Stroke (cerebral hemorrhage)	3.8	2.5	na	na
Heart disease (not including palpitations)	13.5	17.5	11.4	14.6
Diabetes	11.7	18.9	10.8	17.8
Liver or gall bladder disease	9.4	8.5	4.4	4.3
Kidney disease (including stones)	10.7	7.8	5.1	3.6
Bronchitis, emphysema, pneumonia, lung disease, asthma, or other lower respiratory tract diseases	13.6	10.6	8.7	6.8
High blood pressure	31.3	33.4	28.6	30.1
Arthritis or rheumatism	10.2	23.1	8.2	20.0
Spinal or vertebral spur	10.4	15.8	6.9	12.6
Hip fracture	1.1	0.5	na	na
Gout	11.4	3.5	8.2	3.0
Gastric ulcer or stomach ailment	24.4	18.5	11.0	12.0
Cataracts	21.3	27.2	13.5	19.0

na = Not applicable (i.e. question not asked)

These selected conditions include eight illnesses that were among the 10 leading causes of death in Taiwan in 2000 (Department of Health, Taiwan, 2000).⁷ Relatively few older Taiwanese report ever having had cancer or a malignant tumor, and even fewer (less than 2%) currently have cancer (Table 4-1). Nonetheless, malignancies accounted for one-quarter of all Taiwanese deaths in 2000. Cancer prevalence may be deceptively low because the respondent does not know (e.g. low screening, not informed by physicians) or because many of those who were diagnosed with cancer or a malignant tumor did not survive to older ages to be interviewed.

⁷ The other two leading causes of death were: accidents and adverse effects (4th) and suicide (9th).

Similarly, fewer than 4% of older Taiwanese report ever having had a stroke, yet cerebrovascular diseases (the most common of which are commonly referred to as a stroke) accounted for 11% of Taiwanese deaths in 2000. An evaluation of data quality indicates that under-reporting of strokes may be a problem in Taiwan, as well as in the U.S. (Beckett et al., 2000).

A sizeable minority of older Taiwanese suffer from heart disease and diabetes; 14% of males and 18% of females report that they have ever had heart disease, while 12% of males and 19% of females report that they have ever had diabetes (Table 4-1). These two conditions accounted for 16% of deaths in 2000. These conditions are typically chronic: once you have it, you have it for the rest of your life. Consequently, we would expect that the proportion reporting they currently have one of these conditions would be similar to the proportion reporting they ever had the condition. Indeed, the proportion reporting current diabetes is nearly as high as those with lifetime experience, but reports of current heart disease are two to three percent lower than the percentage reporting ever having had the condition.

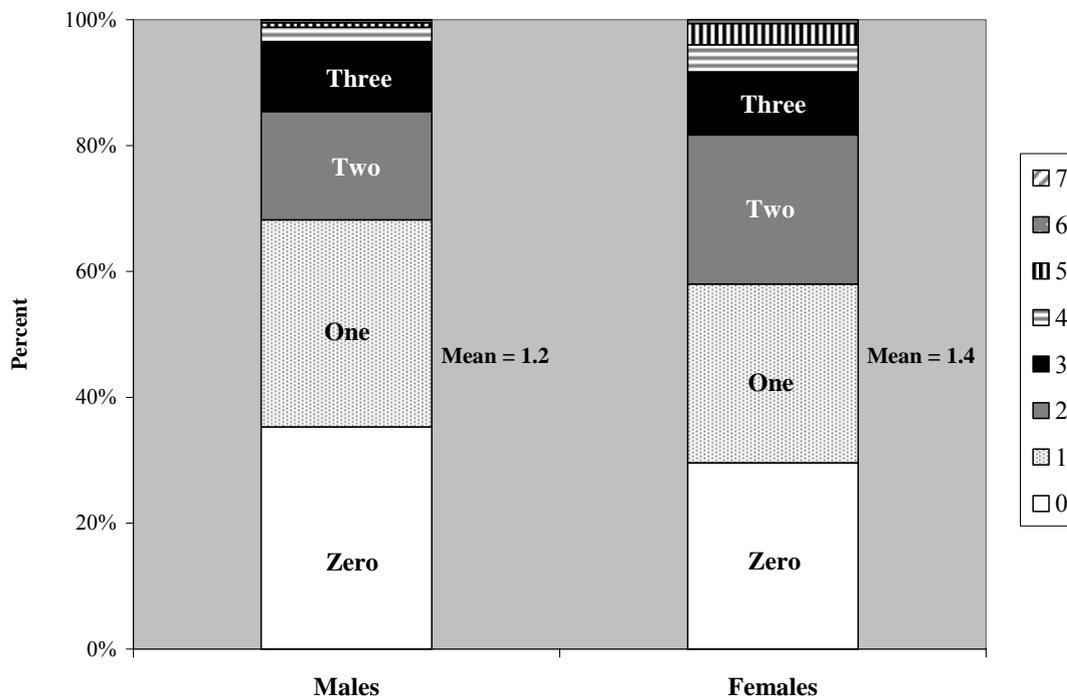
Among other leading causes of death, liver or gall bladder disease afflicts four percent of older Taiwanese, while a similar percentage (5% of males and 4% of females) report current kidney disease. Nine percent of men and seven percent of women report a current lower respiratory tract disease such as bronchitis, emphysema, pneumonia, lung disease, or asthma.

While not a leading cause of death, high blood pressure may precipitate other chronic illnesses such as heart disease, stroke, and kidney disease. As the data from the physical examination suggested (see Chapter 3), the prevalence of hypertension appears to be slightly higher among women than men. One-third of older women report having had high blood pressure versus 31% of men.

The remaining conditions shown in Table 4-1 are likely to cause considerable physical discomfort and/or severely limit functional mobility even if they are not ultimately fatal. Women are much more likely than men to currently suffer from arthritis or rheumatism (20% vs. 8%, respectively), from a spinal or vertebral spur (13% vs. 7%), and from cataracts (19% vs. 14%). On the other hand, men are more likely to have experienced a hip fracture (1.1% vs. 0.5%) or gout (11% vs. 4%). Slightly more than one-tenth of older Taiwanese currently have a gastric ulcer or other stomach ailment, but nearly one-quarter of men and almost one-fifth of women have had such an ailment at some time in their life.

Figure 4-1 shows the distribution of the total number of current chronic conditions among this older Taiwanese population. In sum, 65% of men and 70% of women currently have at least one of the 12 conditions shown in Table 4-1 (excluding stroke and hip fracture). One-third of men and 28% of women have only one chronic condition, but 15% of men and 18% of women have three or more such conditions. On average, men have 1.2 conditions compared with 1.4 among women.⁸

⁸ Greater levels of morbidity among women do not appear to be due to an age differential. The age distribution is very similar between men and women in this sample. Moreover, simple regression models indicate that even after controlling for age, women remain more likely than men to experience poor health outcomes.

Figure 4-1. Number of Current Chronic Illnesses or Conditions

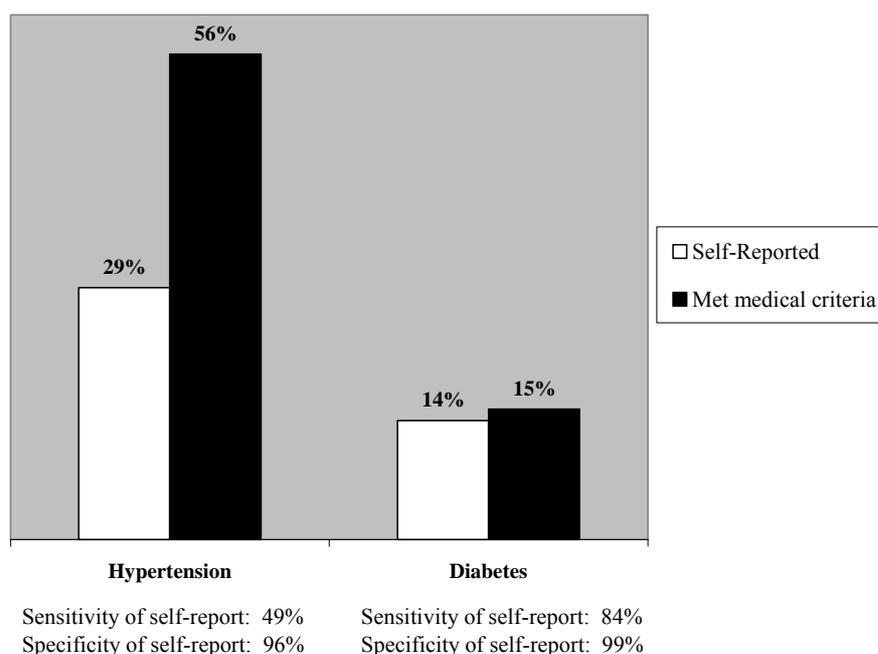
Survey data have the advantage that, unlike clinical records, they can be readily obtained for a large and representative sample of the population without great expense. Unfortunately, they have a potential drawback as well: the accuracy of self-reports depends on the respondents' knowledge of the relevant information, ability to recall it, and willingness to report it. Consequently, one might wonder whether self-reports underestimate the prevalence of various health conditions.

In order to assess the accuracy of the self-reported data, we compare the prevalence of hypertension and diabetes based on biomedical criteria versus self-report. Using data from the physical examination portion of the SEBAS, we identified those with "clinically-evaluated" hypertension, defined as systolic blood pressure equal to or greater than 140 mm Hg and/or diastolic blood pressure equal to or greater than 90 mm Hg and/or taking antihypertensive medication (NIH, 1997). Respondents were considered to have diabetes if glycosylated hemoglobin (HbA_{1c}) values were greater than or equal to 7.0% (although not typically used in screening, HbA_{1c} values in the range of 6.5-7.0% often indicate a diabetic condition).

Figure 4-2 shows the percentage of respondents who reported hypertension and diabetes versus the percentage who met the clinical criteria for these two conditions. These estimates suggest that self-reports vastly underestimate the prevalence of hypertension, but yield a reasonably accurate estimate of the prevalence of diabetes (Goldman et al., 2003). The measures of sensitivity (i.e. the percentage who reported the condition among those who fit the clinical criteria) and specificity (i.e. the percentage who *did not* report the condition among those who *did not* fit the medical criteria) explain how the huge discrepancy for hypertension arises. Among those who met the clinical criteria for hypertension, only 49% reported having high

blood pressure. Yet, specificity was very high; only 4% of those who *did not* satisfy the medical criteria self-reported high blood pressure (specificity = 96%). For diabetes, the sensitivity was relatively high (84%) and specificity was extremely high (99%).

Figure 4-2. Self-Reported vs. Clinically-Evaluated Hypertension and Diabetes



Multivariate models predicting the accuracy of self-reports show that formal education and the recency of the last health exam were related to more accurate self-reports among hypertensives (data not shown, for details see Goldman et al., 2003). Age was also related to more accurate self-reports among hypertensives, but was related to *less* accurate reports among normotensive respondents. That is, older respondents were more likely than younger respondents to report hypertension, whether or not they actually had the condition.

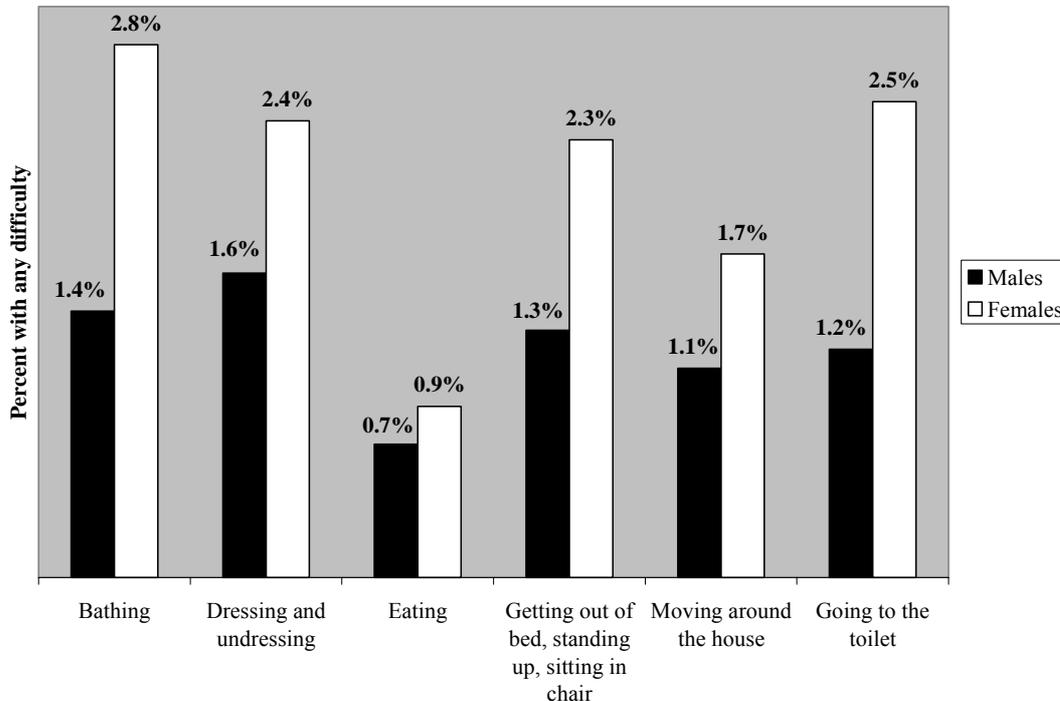
Physical Functioning

Physical functioning is often measured in terms of Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs). ADLs refer to personal care needs such as bathing, eating, and dressing. IADLs refer to activities necessary for maintaining a living environment such as performing household chores, shopping, and managing money. ADL and IADL limitations reflect disability in the sense of an “inability or limitation in performing socially defined roles and tasks expected of an individual within a sociocultural and physical environment” (Nagi, 1991:315).

Figure 4-3 presents the percentage of older Taiwanese who have any difficulty with various ADLs. Although the most commonly reported limitations involve bathing and dressing or undressing, fewer than 2% of males and 3% of females have any one of these ADL limitations.

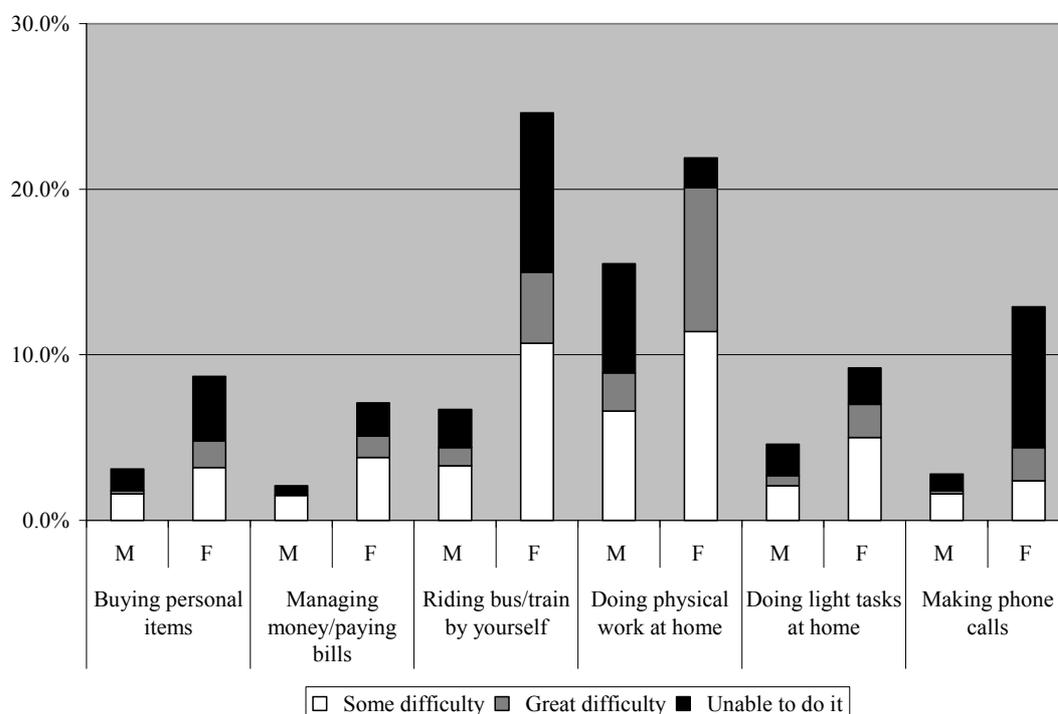
Limitations are more common among women than men: Overall, females are twice as likely as males to have at least one ADL limitation (6% vs. 3%, data not shown).

Figure 4-3. Percent with Any Difficulty with Activities of Daily Living (ADLs)



IADL limitations are more common and again, tend to be more frequent among women than men (Figure 4-4). The most common IADL limitations involve doing physical work around the home, making phone calls, and among women, riding the bus or train by oneself. Twenty-two percent of women and 16% of men have at least some difficulty doing physical work around the home such as cleaning gutters or washing windows, but only 2% of women say they are unable to perform these tasks compared with 7% of men. Yet, 8% of women say they are unable to make phone calls and 10% say they cannot ride the bus or train by themselves, while the comparable figures among men are 1% and 2%, respectively. In total, 41% of older Taiwanese women and 17% of men have at least some difficulty with one or more IADLs (data not shown). On average, men have 0.34 IADL difficulties compared with 0.94 among women.

Figure 4-4. Instrumental Activities of Daily Living (IADLs) by Level of Difficulty

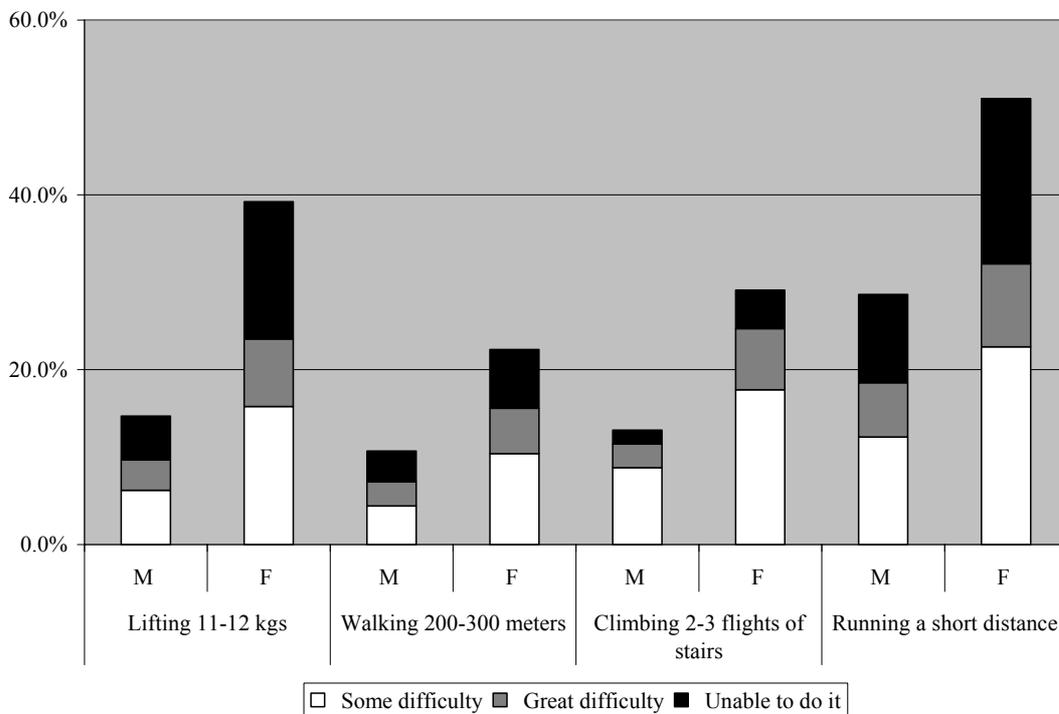
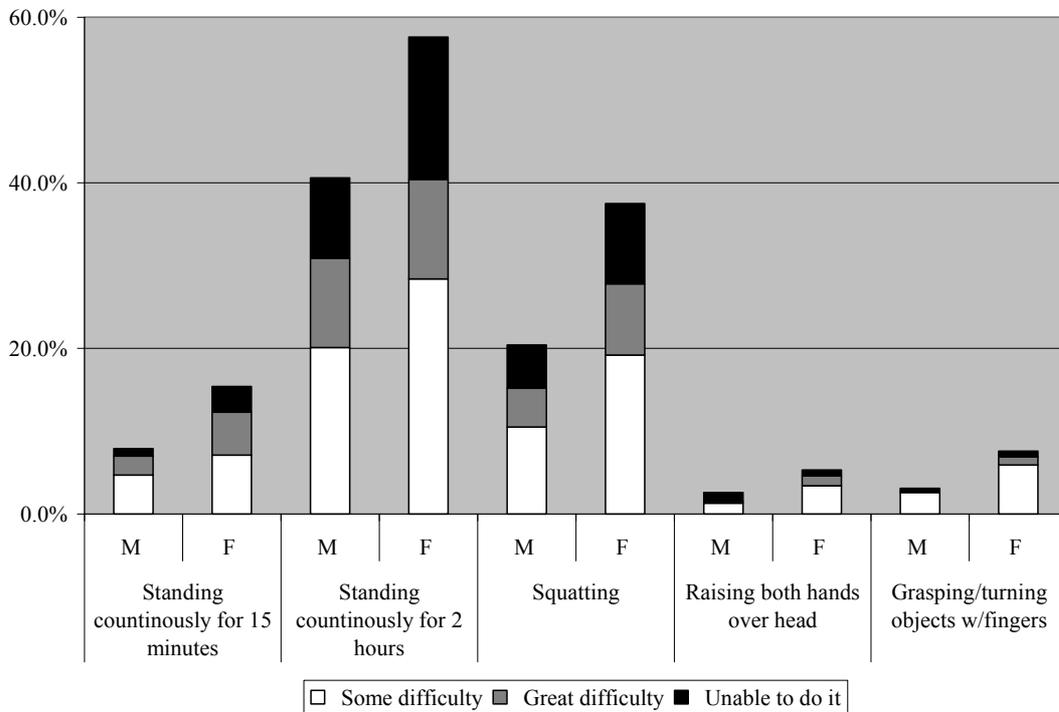


M = Male F = Female

Other general functioning tasks, such as walking a given distance or climbing stairs, reflect functional abilities that are not tied to a socially defined role (Verbrugge and Jette, 1994). IADL limitations in particular may be confounded with role expectations and cultural factors, whereas the ability to perform various physical movements is likely to be more comparable cross-culturally (Freedman and Martin, 1998; Zimmer and Lin, 2000; Zimmer et al., 1998)

Figure 4-5 shows the level of mobility limitation for various physical tasks. The most common mobility limitations involved standing for an extended period of time and running a short distance, but a substantial proportion of older Taiwanese, especially females, also have difficulty with lifting, squatting, climbing stairs, and walking 200-300 meters. Among older females, 58% report at least some difficulty standing continuously for 2 hours and 51% report difficulty running 20-30 meters; the percentages unable to perform these respective tasks are 17% and 19%. Comparable figures among males are 41% and 29% having at least some difficulty on these respective tasks and 10% unable to do each of these tasks.

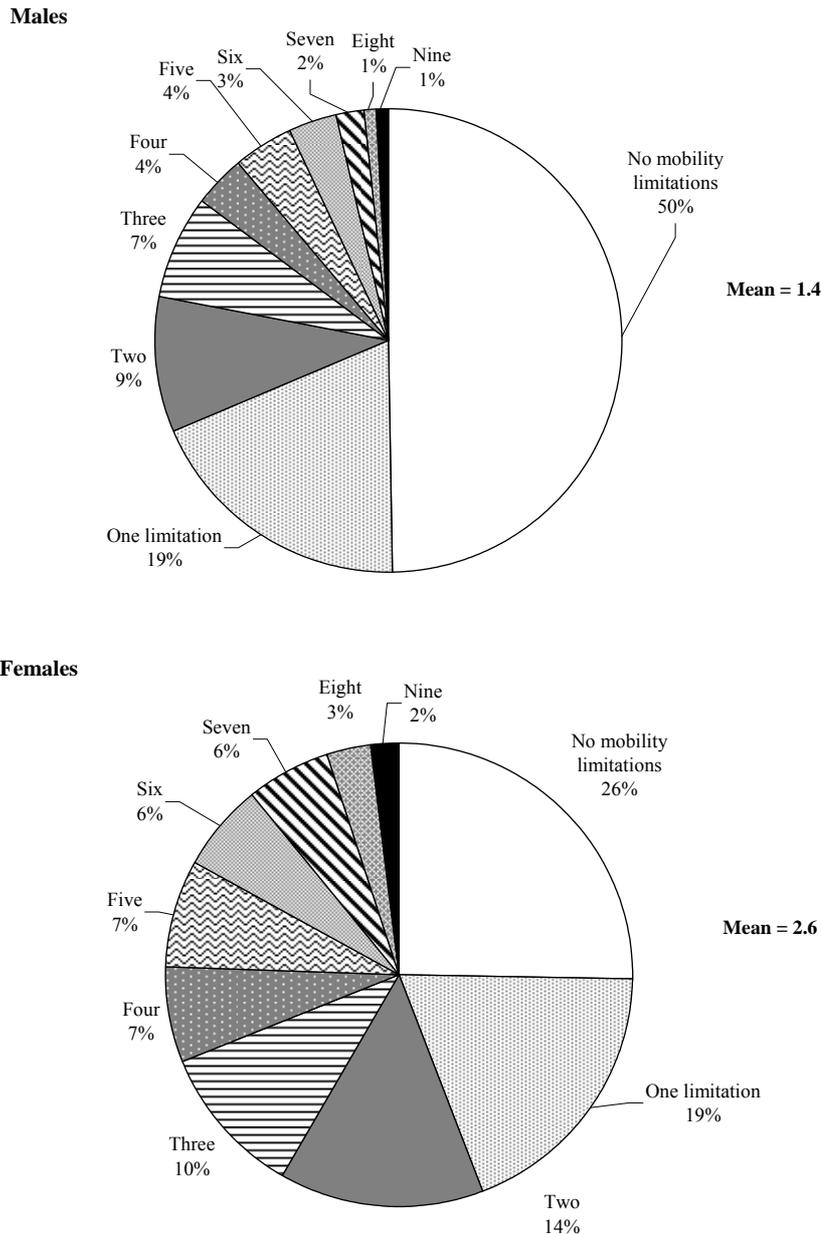
Figure 4-5. Mobility Limitations by Level of Difficulty



M = Male F = Female

As shown in Figure 4-6, three-quarters of older women and half of older men have difficulty with at least one of these physical tasks. Nearly one-third of women and 15% of men have four or more such limitations. On average, men have 1.4 mobility limitations versus 2.6 among women.

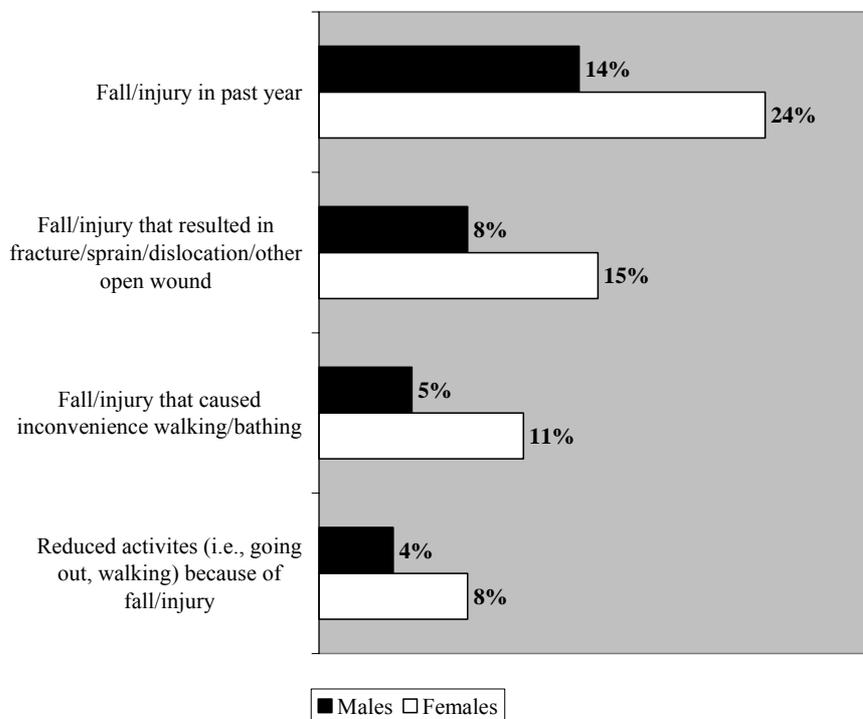
Figure 4-6. Number of Mobility Limitations (Any Difficulty)



Fall or Injury in the Past Year

Falls and injuries can have much greater consequences for older people than for younger ones. Figure 4-7 shows the proportion of older Taiwanese who experienced a fall or injury in the year prior to the survey. Women were more likely to have a fall or injury than men (24% vs. 14%) and were more likely to suffer adverse outcomes as a result of the event. For example, only 8% of men, but 15% of women, experienced a fracture, sprain, dislocation, or other open wound. Smaller proportions were inconvenienced in terms of walking or bathing or reduced their activities as a result of the fall or injury, but women were still twice as likely as men to suffer such difficulties.

Figure 4-7. Fall or Injury in the Past



Comparisons with the United States

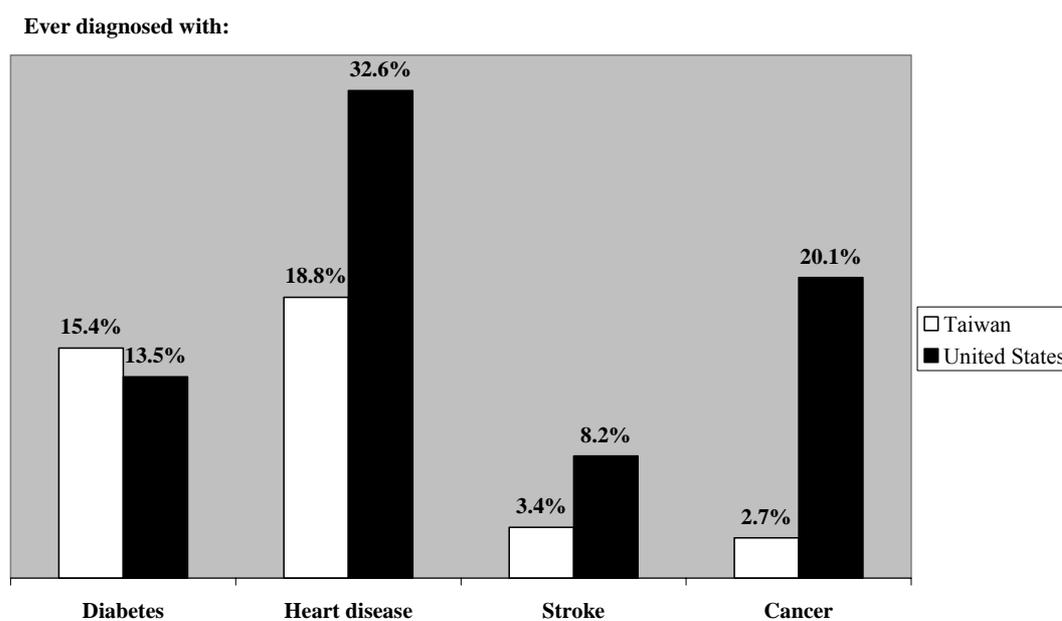
Eight of the top ten leading causes of death are common to both Taiwan and the United States (Department of Health, Taiwan, 2000; Anderson, 2002). Therefore, it is informative to compare the prevalence of some of these chronic diseases between the countries.

Data for the U.S. come from the 1997 National Health Interview Survey (NHIS). In order to make meaningful comparisons, we restrict the SEBAS sample to those aged 65 and older in order to match the age category given in the NHIS data. The U.S. data are standardized to match the sex distribution of the weighted SEBAS sample (aged 65+).

As shown in Figure 4-8, the prevalence of diabetes among those aged 65 and older is slightly higher in Taiwan than in the U.S. Nonetheless, there are important sex differences: the prevalence of diabetes is much higher among Taiwanese women than men (25% vs. 9%, respectively), whereas in the U.S. the figures are similar between males and females (13.3% vs. 13.7%).⁹

On the other hand, heart disease, stroke, and cancer are much more common among the elderly population in the U.S. than in Taiwan. Prevalence of heart disease is nearly twice as high (33% in the U.S. vs. 19% in Taiwan), more than twice as many Americans have had a stroke (8% vs. 3% in Taiwan), and nearly seven times as many Americans have ever been diagnosed with cancer (20% vs. 3% in Taiwan). Part of this large difference in the prevalence of cancer could result from reporting biases: for example, the Taiwanese may be less likely to report cancer, perhaps because they were less likely to be diagnosed, to be told of their condition, or to be willing to acknowledge it in an interview.

Figure 4-8. Prevalence of Selected Chronic Diseases Among Those Aged 65 and Older, Taiwan and the United States



Source of US data: Blackwell DL, Collins JG, and Coles R. (2002). Summary health statistics for U.S. adults: National Health Interview Survey, 1997 (Table 2, 6, and 8). Vital Health Statistics 10(205):25. Hyattsville, MD: NCHS. Sex standardized to Taiwan SEBAS distribution (weighted).

⁹ The NHIS specifically excludes gestational diabetes. Nonetheless, it does not appear that the higher prevalence of diabetes among Taiwanese women is simply due to gestational diabetes. If that were the case, we would expect reports of current diabetes to be much lower than reports of ever having had diabetes. In fact, the figures are very similar: 24% versus 25%, respectively.

Summary

In 2000, the three leading causes of death in Taiwan were cancer (malignancies), cerebrovascular diseases (e.g. stroke), and heart disease (Department of Health, Taiwan, 2000). Few older Taiwanese in the SEBAS report that they have ever had cancer or a stroke, but a sizeable minority suffer from heart disease. Diabetes, the fifth leading cause of death in Taiwan, also afflicts a significant proportion of the SEBAS sample. Notably, the prevalence rates for all four of these illnesses are higher among women than men. Consistent with the data from the SEBAS medical examination (see Chapter 3), more women than men report high blood pressure, a condition that often precipitates more serious illnesses. On the other hand, men are more likely than women to report liver disease, kidney disease, and respiratory illnesses, all of which are among the 10 leading causes of death. Women are more likely to suffer from debilitating conditions such as arthritis, vertebral spurs, and cataracts, which, although not fatal, may limit mobility and increase pain or discomfort. Men are more likely than women to suffer another debilitating condition: gout.

Overall, about two-thirds of older Taiwanese currently have a least one of the 12 chronic conditions examined in the SEBAS, while 15% of men and 18% of women have three or more such conditions. Analyses of the validity of self-reported chronic conditions suggest that these illnesses may be under-reported compared with clinical evaluation, although the extent of under-reporting may vary across conditions.

In terms of physical functioning, relatively few older Taiwanese have difficulty performing the basic tasks of everyday life (Activities of Daily Living or ADLs) such as eating or bathing, but the proportion with at least one such limitation is twice as high among women as men (6% vs. 3%, respectively). Difficulty with activities related to independent living (Instrumental Activities of Daily Living or IADLs) such as preparing meals and managing money is much more common, again affecting more women than men (41% vs. 17% with at least one IADL difficulty). An even greater proportion of older Taiwanese have some mobility limitation; three-quarters of women and half of men have difficulty with a physical movement such as standing or running a short distance. Women are also more likely than men to have suffered a recent fall or injury and to have suffered adverse outcomes as a result.

Comparison with data from the United States suggests that the prevalence of cancer, stroke, and heart disease are much lower among older Taiwanese than their American counterparts, although levels of diabetes appear to be slightly higher. The higher prevalence of diabetes is restricted to women, among whom rates are nearly twice as high in Taiwan as in the United States; men in Taiwan have somewhat lower prevalence of diabetes than their American counterparts.

On the whole, it appears that older women in Taiwan are worse off than men in many aspects of physical health including prevalence of various chronic conditions and level of physical functioning.

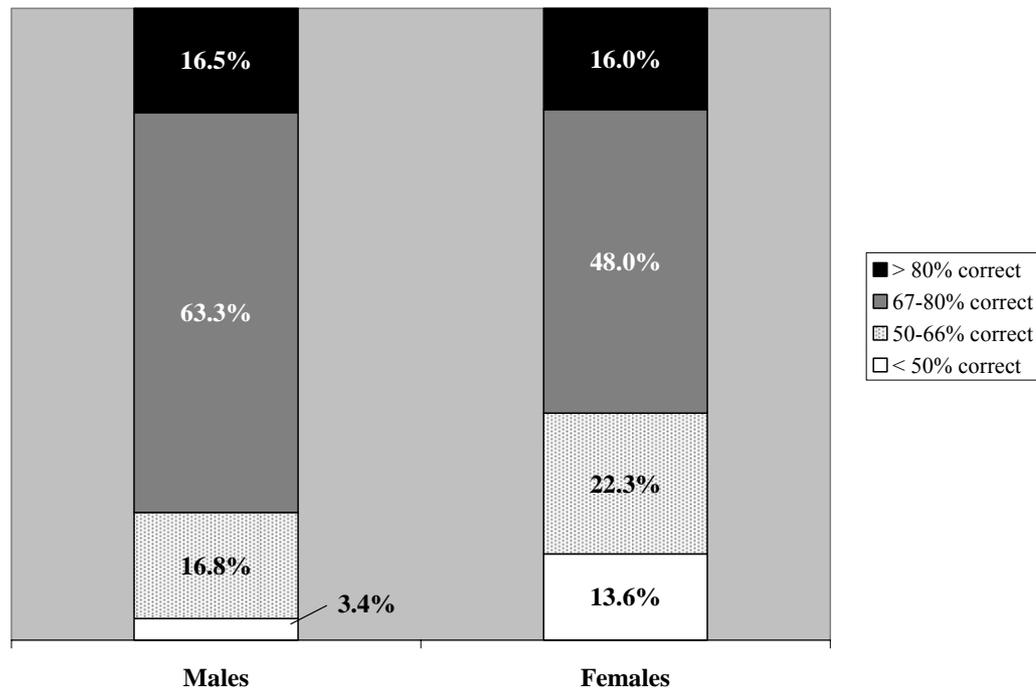
Chapter 5 : Cognitive and Psychological Well-Being

This chapter explores various indicators of cognitive and psychological well-being among the older Taiwanese population. Since 1948, the World Health Organization (WHO) has defined health as a “state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity” (WHO, 1948; WHO, 2001). The data examined in this chapter reflect aspects of well-being that go beyond physical health although the two are often linked. These data come from the individual interview portion of the SEBAS and are based on self-reports.

Cognitive Function

We measure cognitive function based on the sum of correct responses to items related to memory, basic orientation, and ability to perform simple subtraction (total possible score of 24). Basic orientation questions include asking the respondent to give his or her address, the date, the day of the week, his or her age, his or her mother’s maiden name, the current president, and the previous president. Memory recall items include asking the respondent to repeat (in any order) ten simple nouns (e.g. Train, Dog, Ship) after the interviewer read them aloud, and asking the respondent to repeat in reverse order five numbers (i.e. 4, 2, 9, 8, 1) that the interviewer just read to them.

Figure 5-1 shows levels of cognitive function by sex. About 16% of both sexes had high cognitive functioning (i.e. more than 80% of the items correct). Only 3% of males were unable to provide correct responses to at least half of the cognitive function tasks—what we might call “poor” cognitive function—but the comparable percentage was much higher among females (14%). The proportion of respondents who answered at least two-thirds of the items correctly was also much higher among men than women (80% vs. 64%, respectively). Cognitive function has been found to be related to education (Hill et al., 1993; Zhang et al., 1990). In our study, the sex differential in cognitive function appears to be greatly reduced in the presence of controls for education (data not shown).

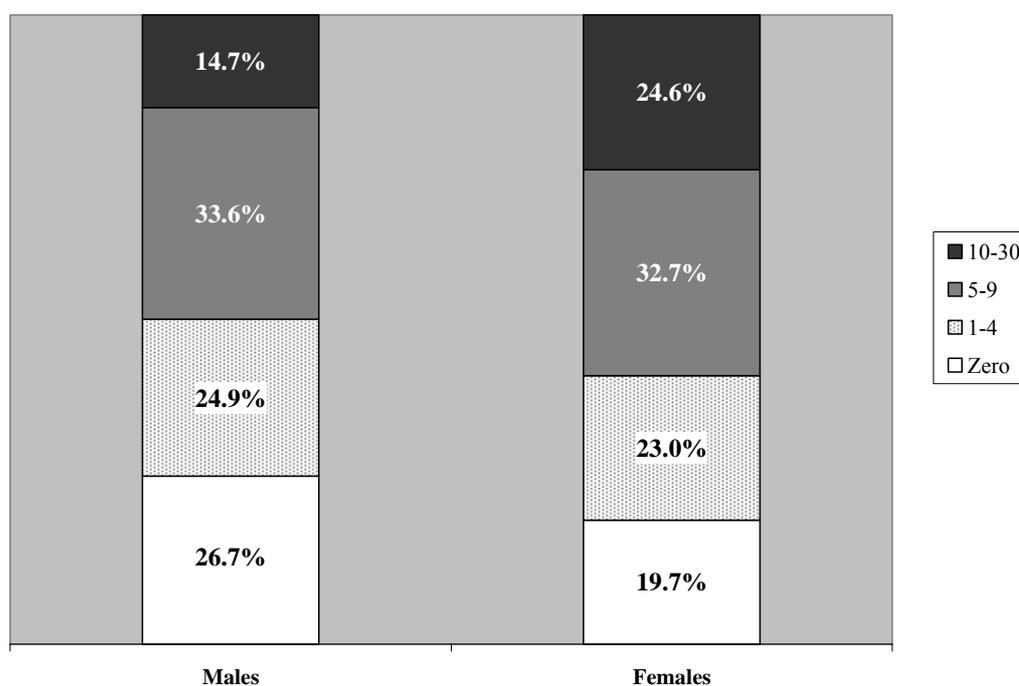
Figure 5-1. Score on Cognitive Function Index by Sex

Depression

The measure of depression is based on 10 (of 20) items in the Center for Epidemiologic Studies Depression (CES-D) scale. Respondents are asked how often in the past week they experienced various situations or feelings such as: not being interested in eating, felt that doing anything was exhausting, and slept poorly. Response categories include none, rarely (one day), sometimes (2-3 days), and often or chronically (4 or more days). These categories are scored 0-3 so that high scores indicate higher levels of depression. The sum across all 10 items forms the index, which has a potential range of 0 to 30. We have categorized the CES-D scores into: 0 (no depressive symptoms), 1-4, 5-9, and 10 or higher. A score of 10 or greater implies a relatively high level of depressive symptoms. For example, a respondent would score 10 if they reported experiencing all ten symptoms “rarely” (i.e. one day a week) or if they reported experiencing three symptoms “often or chronically” and one symptom “rarely”.

Figure 5-2 shows the distribution across categories of the CES-D by sex. One-quarter of older women score 10 or higher on the depression index compared with only 15% of men. More than half of males and 43% of females report no depressive symptoms or a relatively low level of such symptoms.

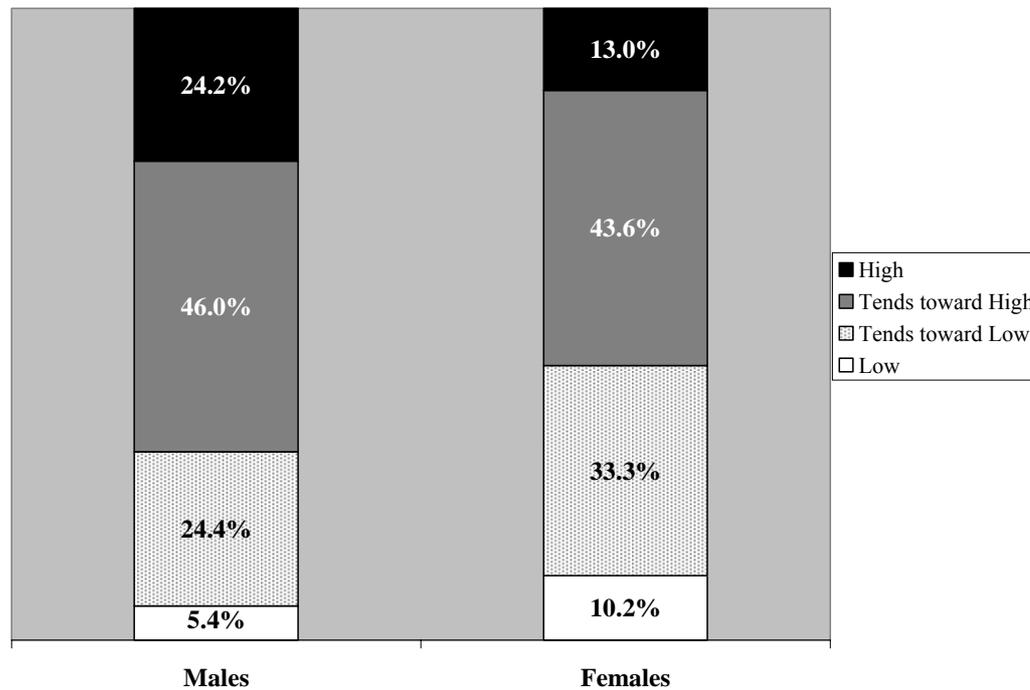
Figure 5-2. Score on Depression (CES-D) Index by Sex



Personal Mastery

Personal mastery refers to a person's sense of control over aspects of one's own life. Our measure is based on seven questions such as: "You have little control over the things that happen to you" and "Sometimes you feel that you are being pushed around in life". Response categories are: strongly agree, agree, disagree, and strongly disagree. Two items reflect greater control (e.g. "What happens to you in the future depends mostly on yourself"), and consequently are reverse-coded so that greater agreement indicates less personal mastery. We take the average score across all items and categorize as follows: low personal mastery (i.e. on average, agrees with these statements), tends toward low (i.e. less than halfway between agree and disagree), tends toward high (i.e. more than halfway between agree and disagree), and high (i.e. on average, disagrees with these statements).

Figure 5-3 shows the distribution across categories of personal mastery by sex. Men are much more likely to express a high degree of personal mastery than women (24% vs. 13%), while they are about half as likely to report a low level of mastery (5% vs. 10%).

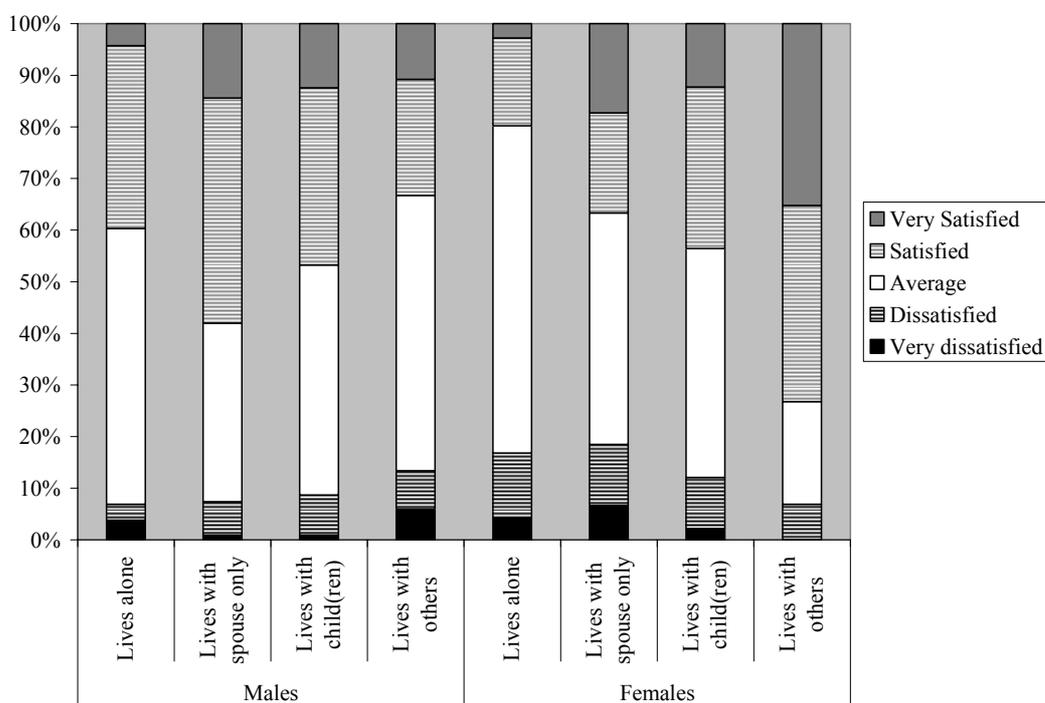
Figure 5-3. Personal Mastery Index by Sex

Satisfaction with Living Situation

As one indicator of the respondent's satisfaction with life, we consider responses to a simple question asking respondents how satisfied they are with their current living situation. We find that close to half of older men and women are satisfied with their living situation, while only 9% of males and 13% of females express dissatisfaction (data not shown).

As shown in Figure 5-4, satisfaction with living situation varies depending on the residential status of the respondent. About two-thirds of respondents live with at least one of their children and nearly one-fifth live only with a spouse (data not shown). Among older women, those who live with their children or others tend to be more satisfied than those living alone or living only with their spouse.¹⁰ In contrast, older men who live only with their spouse are more likely to be satisfied (58%) than those living alone, with their children, or with others.

¹⁰ Even among married women, those living with their child(ren) are more likely to be satisfied (or very satisfied) with their living arrangement (43%) than those living only with their spouse (37%). Among married men, the opposite is true: those living only with their spouse are more likely to be satisfied (58%) than those living with their child(ren) (46%).

Figure 5-4. Satisfaction with Living Situation by Residential Status**Summary**

The SEBAS data indicate that a sizeable portion of the older population in Taiwan experience relatively low levels of cognitive functioning and psychological well-being, and women tend to be substantially worse off than men.

One-fifth of men and just over one-third of women were unable to correctly answer at least two-thirds of memory, knowledge, and calculation tasks, although the proportion with poor cognitive functioning (< 50% correct) was relatively small. Women were more likely to have poor cognitive functioning than men, but they were just as likely to have very high cognitive functioning (> 80% correct).

A substantial proportion of older Taiwanese report high levels of depressive symptoms, particularly among women (25% vs. 15% of men). Compared with men, women are also much less likely to perceive a high degree of personal mastery (or control) over their own lives, and are twice as likely to express a low level of mastery. In general, the majority of older Taiwanese are satisfied or at least content with their current living situation. Men seem to be most satisfied living with only their spouse, whereas women tend to be more satisfied when living with their children or others.

Chapter 6 : Stress and Environmental Challenge

In this chapter, we present data on the degree of stress and environmental challenge among older Taiwanese. Stress-provoking experience is one of the many factors that contribute to disease and ill health and inhibit overall well-being. Stress has been linked to the development of type-II diabetes, cardiovascular disease, and chronic illness, while having a negative effect on immune function and ability to perform cognitive and physical tasks. In addition, stress and negative life events are associated with depression, anxiety, and other psychiatric disorders. We examine the level of stress and anxiety related to personal and family life, the repercussions of a major traumatic event – the 1999 earthquake, and security-related stress. The data come from the individual interview portion of the SEBAS and are based on self-reports.

Stress and Anxiety

Our measure of personal and family-related stress and anxiety is based on questions about whether each of seven situations makes the respondent feel stressed or anxious: the respondent's own health, financial situation, and relations with family members, and his or her family or children's health, financial situation, job, and marital situation. Each item is scored on a three-point scale: no stress or anxiety (0), some stress or anxiety (1), or a lot of stress or anxiety (2). We take the average score across all items and categorize into: no stress (0 on all items), some stress (i.e. 1 or less on average), and high stress (i.e. greater than 1 on average).

As shown in Figure 6-1, a substantial proportion of older Taiwanese report no personal or family-related stress or anxiety whatsoever, although the majority report some stress in their lives. Relatively small percentages (5% of men and 6% of women) report a high level of stress.

Figure 6-1. Level of Stress/Anxiety by Sex

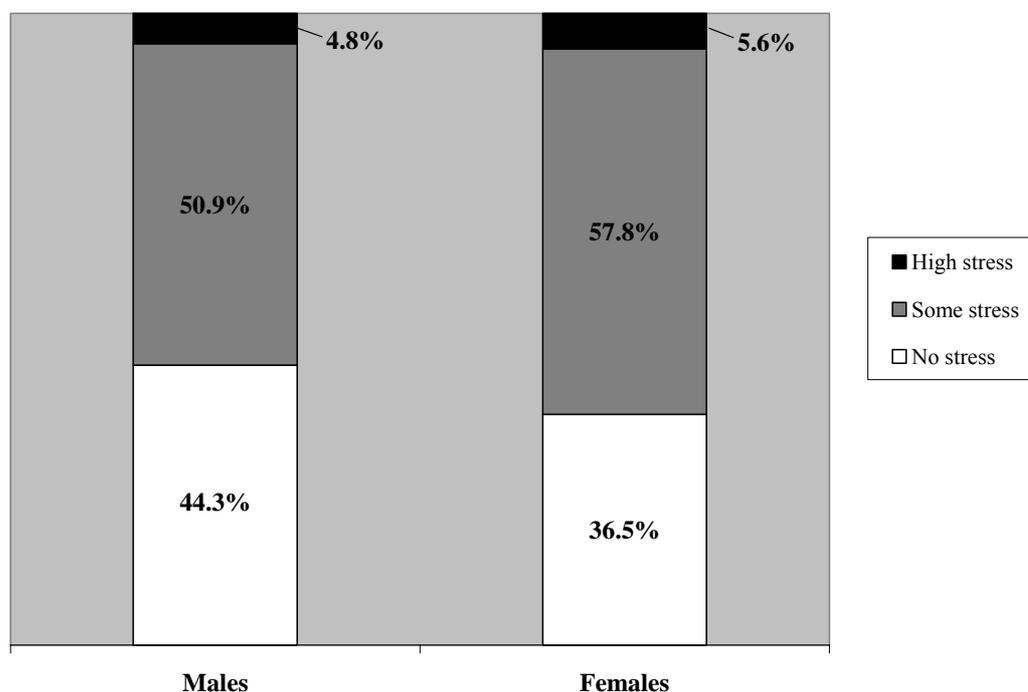
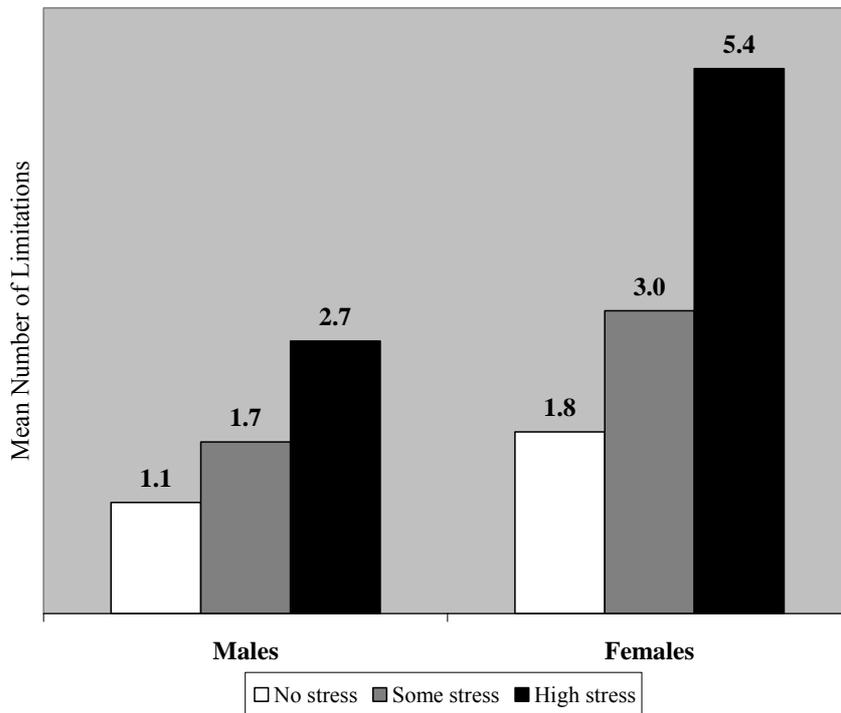


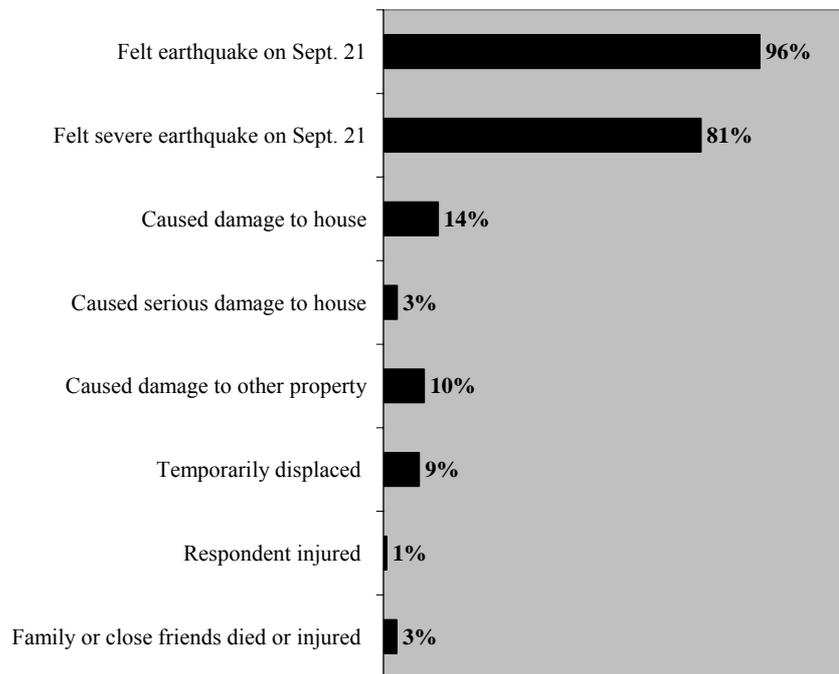
Figure 6-2 shows the association between stress level and physical functioning. Physical functioning is measured by summing the number of ADL (out of six, see Figure 4-3) and mobility tasks (out of nine, see Figure 4-5) that the respondent has at least some difficulty performing (potential range = 0-15). These data indicate a strong relationship between stress and functional limitations, particularly for women. Older women with high levels of stress have, on average, more than five functional limitations versus less than two limitations among their counterparts with no stress. Among men, the comparable figures are 2.7 versus 1.1 limitations on average. Because these data are cross-sectional, the results do not necessarily mean that stress *caused* the functional limitations. Rather, it may be that older Taiwanese with functional limitations perceive a higher level of stress in their lives.

Figure 6-2. Mean Number of Functional Limitations by Level of Stress

Earthquake

Traumatic events can also induce stress and anxiety, which may have long-term consequences. One such environmental challenge – an earthquake – occurred during the planning stages of the SEBAS. Consequently, questions about people’s experience of the earthquake and its consequences were added to the survey prior to going into the field. Figure 6-3 shows the negative consequences experienced by older Taiwanese. The vast majority of Taiwanese felt the Chi-Chi earthquake on September 21st, 1999, and nearly all of those reported it as severe. A much smaller proportion reported negative consequences resulting from the earthquake or its aftershocks. For example, 14% of older Taiwan reported damage to their house, but only 3% reported serious damage. One-tenth of older Taiwanese reported damage to other property and 9% were temporarily displaced. Only one in a hundred were themselves injured, while three percent had family or close friends who were injured or died.

Figure 6-3. Negative Consequences of 1999 Earthquake

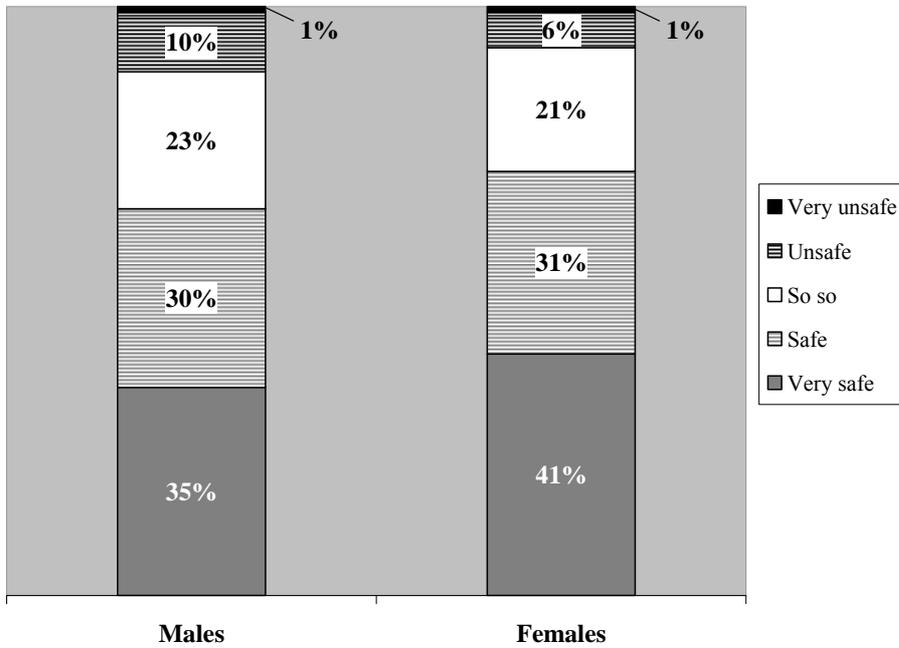


Crime and Security

Crime and lack of security in one's community are also sources of environmental stress. Figure 6-4 displays the distribution of responses to a question regarding the respondent's perception of safety in his or her own community. More than two-thirds of older Taiwanese feel safe or very safe in their communities. A relatively small percentage view their communities as unsafe, though a greater proportion of men than women feel this way (11% vs. 7%, respectively).

Figure 6-4. Perception of Safety in the Community by Sex

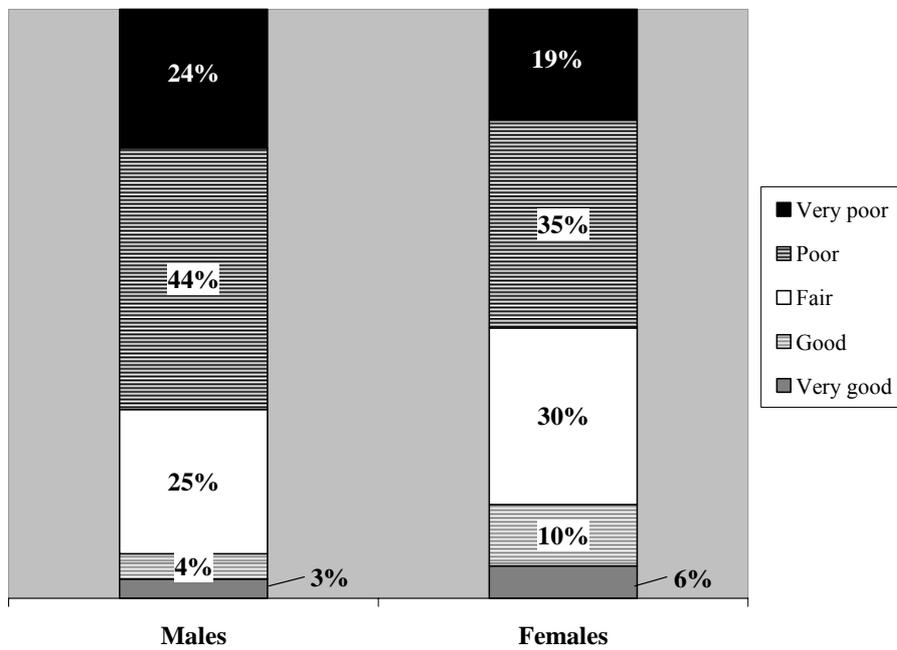
Do you see your current residence and its community environment as safe or not?



Despite their overall sense of safety in their own communities, only 7% of men and 16% of women view security in society as good or very good (Figure 6-5). More than two-thirds of men and over half of women say that security in society is poor or very poor.

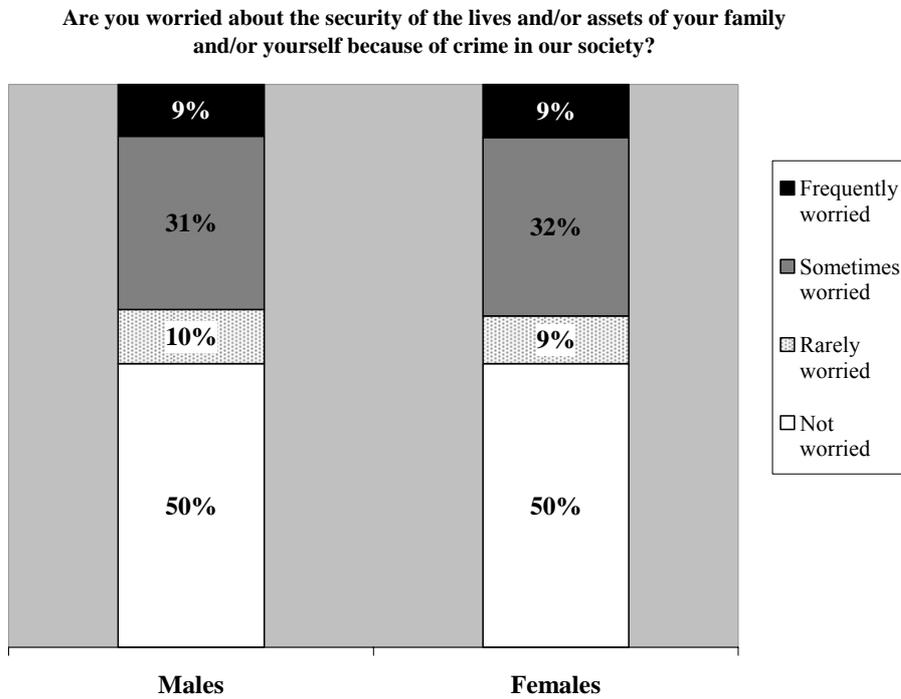
Figure 6-5. Perception of Security in Society by Sex

With regard to crime, do you see current security in our society as good or not?



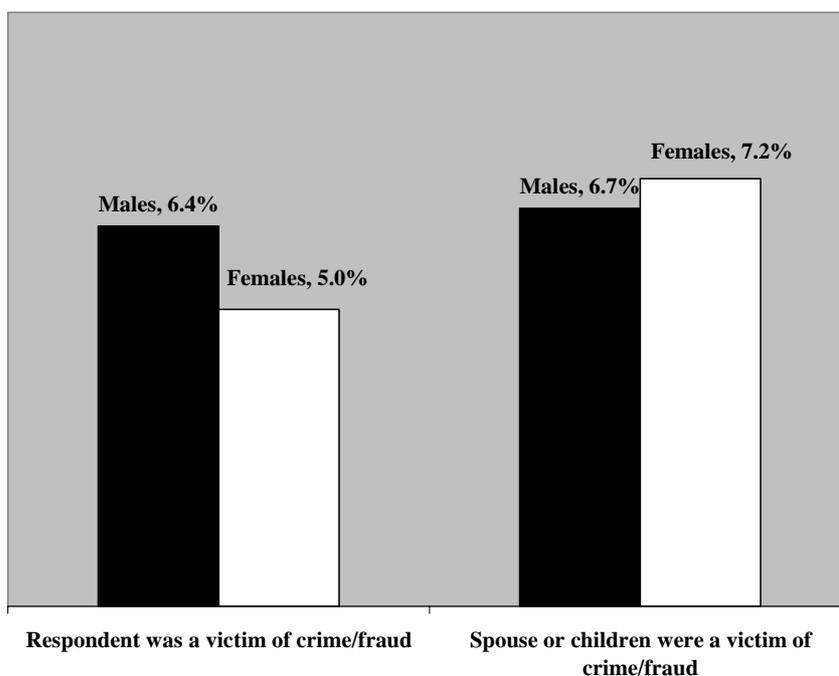
In general it appears that the sense of lack of security among older Taiwanese reflects their perception for society as a whole rather than their own personal safety. As shown in Figure 6-6, less than one-tenth of these Taiwanese are frequently worried about the security of their own or their family's lives or assets because of crime, and half say they are not worried at all.

Figure 6-6. Worried about Security by Sex



In terms of actual crime victimization, the numbers are consistent with the general sense of safety expressed by older Taiwanese. Only 6% of males and 5% of females were victims of crime or fraud in the year prior to the survey, and a slightly higher proportion reported victimization of their spouse or children (Figure 6-7).

Figure 6-7. Crime Victimization in the Past Year by Sex



Summary

Few older Taiwanese perceive a high level of stress in their personal or family life, but among both men and women, higher levels of stress are associated with a greater number of functional limitations. The direction of causation is unclear.

With respect to environmental challenges, the vast majority of older Taiwanese report having felt a severe earthquake on September 21, 1999, but much lower proportions report damage to their homes or other property, being temporarily displaced, or suffering injuries as a result of the earthquake. The majority of older Taiwanese report feeling safe in their communities and rarely worry about their own personal or their family's security. Only a small proportion report having been victims of crime or fraud in the year prior to the survey. Nonetheless, relatively large numbers of Taiwanese report poor security in the society as a whole.

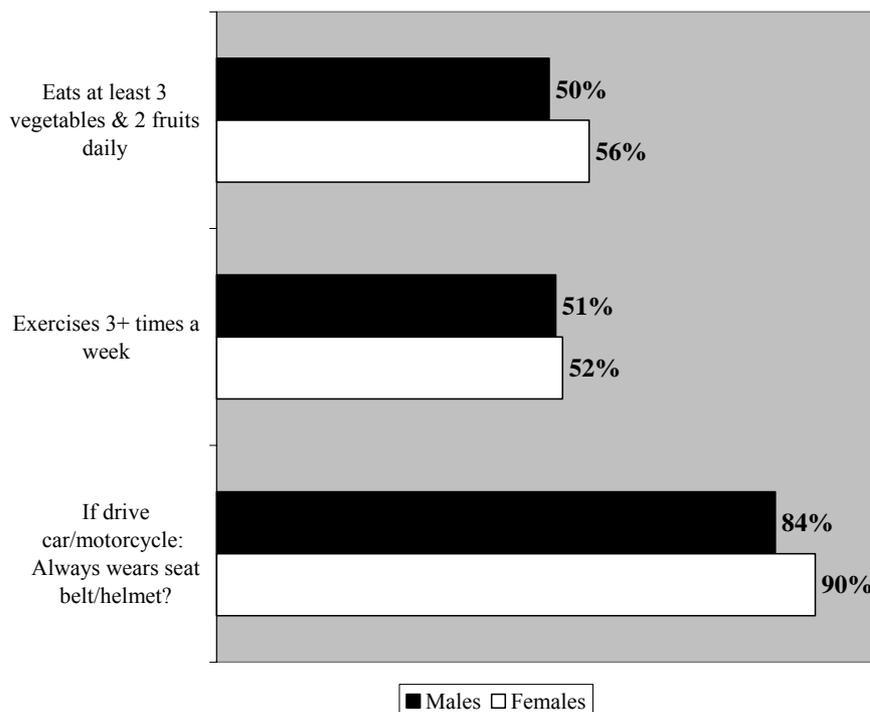
Chapter 7 : Health and Social Behaviors

In this chapter, we examine health-related behaviors and social participation among older Taiwanese. Some health behaviors and social interaction with others may be protective, whereas other behaviors such as substance use may have negative effects on health and well-being. The data are based on self-reported responses to questions asked during the in-home interview or in the hospital on the day of the health examination.

Health and Safety Practices

Figure 7-1 presents information regarding practices that are likely to have positive effects on health and well-being. Only about half of older Taiwanese eat a healthy diet that includes at least three vegetables and two fruits daily. A similar proportion engage in regular exercise at least three times a week. Yet, the vast majority wear safety equipment (i.e. seat belt/helmet) when they drive a motor vehicle.

Figure 7-1. Health and Safety Practices by Sex



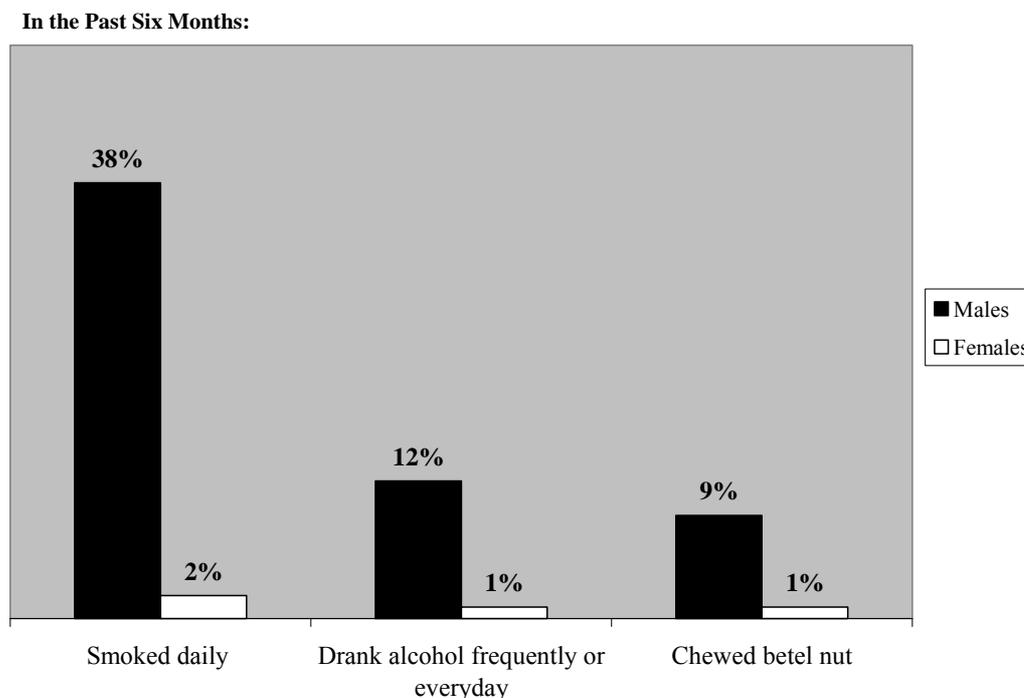
Substance Use

Substance use is very low among older women, whereas a substantial proportion of men regularly smoke or drink alcohol (Figure 7-2). More than one-third (38%) of men smoke on a daily basis,¹¹ and 12% of men frequently consume alcohol. In addition, 9% of men chew betel nut, a stimulant. Use of these substances may have negative effects on health, although regular

¹¹ Less than two percent of respondents reported smoking on less than a daily basis.

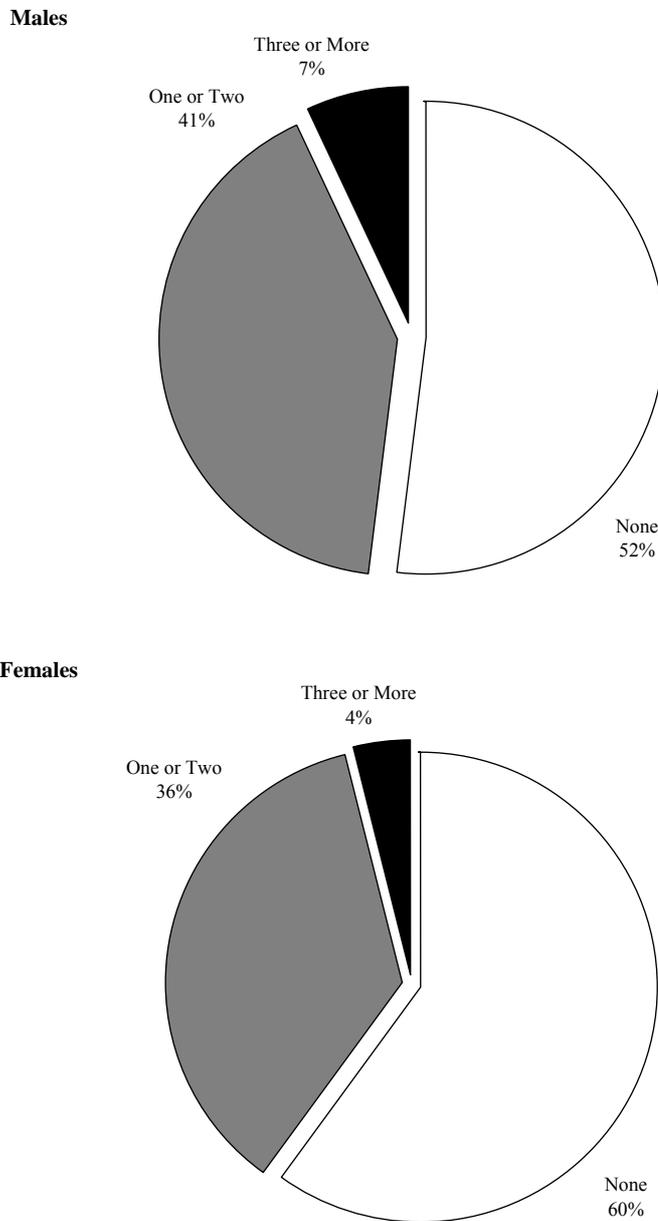
alcohol use is not necessarily detrimental if consumed in moderation and in fact, may even be protective for cognition and cardiovascular risk—at least for men (Mukamal et al., 2003).

Figure 7-2. Substance Use by Sex



Social Participation

During the interview, respondents were asked whether they participate in each of the following organizations or activities: neighborhood association; religious association; professional group (e.g. farmer's or fisherman's association) or civic club, political association, social service group, village or lineage association, elderly club, and elderly education. More than half of older men and six out of ten older women reported no involvement in any of these social activities (Figure 7-3). Nonetheless, a substantial minority is involved in one or two activities, and a small percentage (7% of men and 4% of women) is very socially active.

Figure 7-3. Participation in Social Activities by Sex**Summary**

The data on health-related behaviors indicate that only about half of older Taiwanese eat a healthy diet and exercise regularly. More than one-third of older males smoke on a daily basis, but relatively small percentages drink alcohol frequently or chew betel nut. Use of these substances is virtually zero among females. Finally, these data suggest that more than half of older Taiwanese do not participate in any organized social activities.

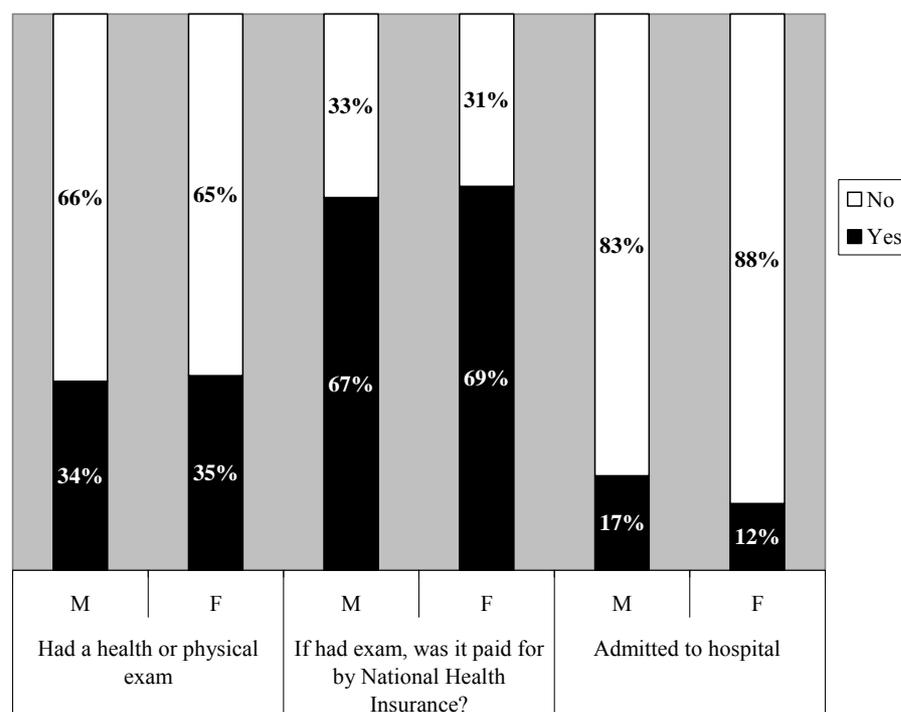
Chapter 8 : Health Care Utilization

This chapter presents data on health care utilization among the older Taiwanese population. We include information about preventive health care examinations as well as hospitalizations and emergency care. In addition, we examine long-term medication use, which may also indicate greater need for and use of medical care. All of these data are based on self-reports. Finally, we compare data on hospitalizations among Taiwanese elderly to similar data for the United States.

Health Services Utilization in the Past Year

About a third of older Taiwanese had a health examination in the past year (Figure 8-1), and among those who did, the examination was paid for by National Health Insurance in about two-thirds of cases. Hospitalization was less frequent, but yet 17% of older males and 12% of older females were hospitalized in the prior year.

Figure 8-1. Health Care Utilization in the Past Year by Sex



M = Males F = Females

Among those who were hospitalized in the past year, about three-quarters were admitted only once (Figure 8-2). Nonetheless, 13% of males and 10% of females had three or more hospital stays. In terms of hospital days, more than two-fifths of males and more than one-third of females spent five or fewer days in the hospital, but 14% were hospitalized for more than 20 days in the prior year (Figure 8-3).

Figure 8-2. Number of Hospital Admissions in the Past Year among those Hospitalized by Sex

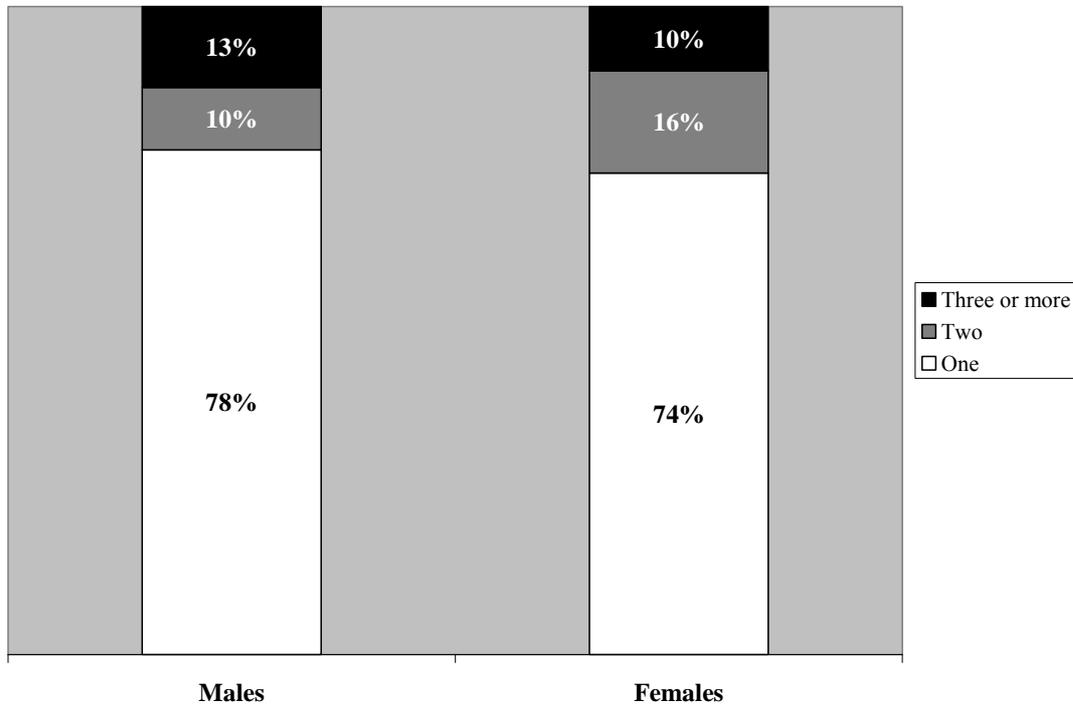
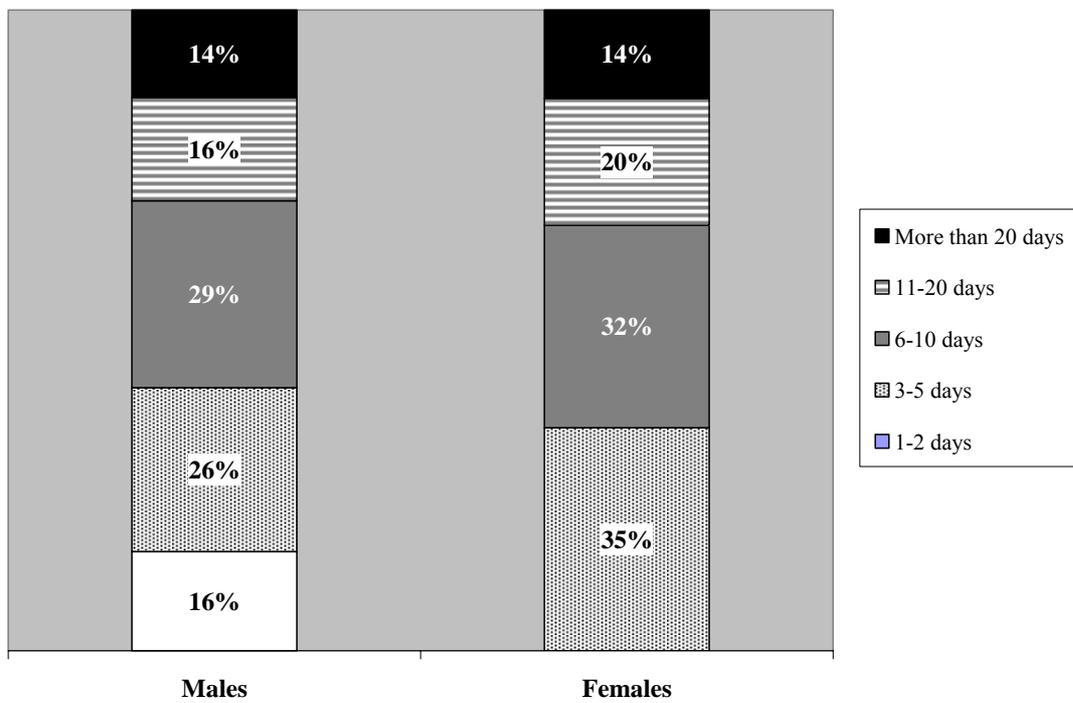
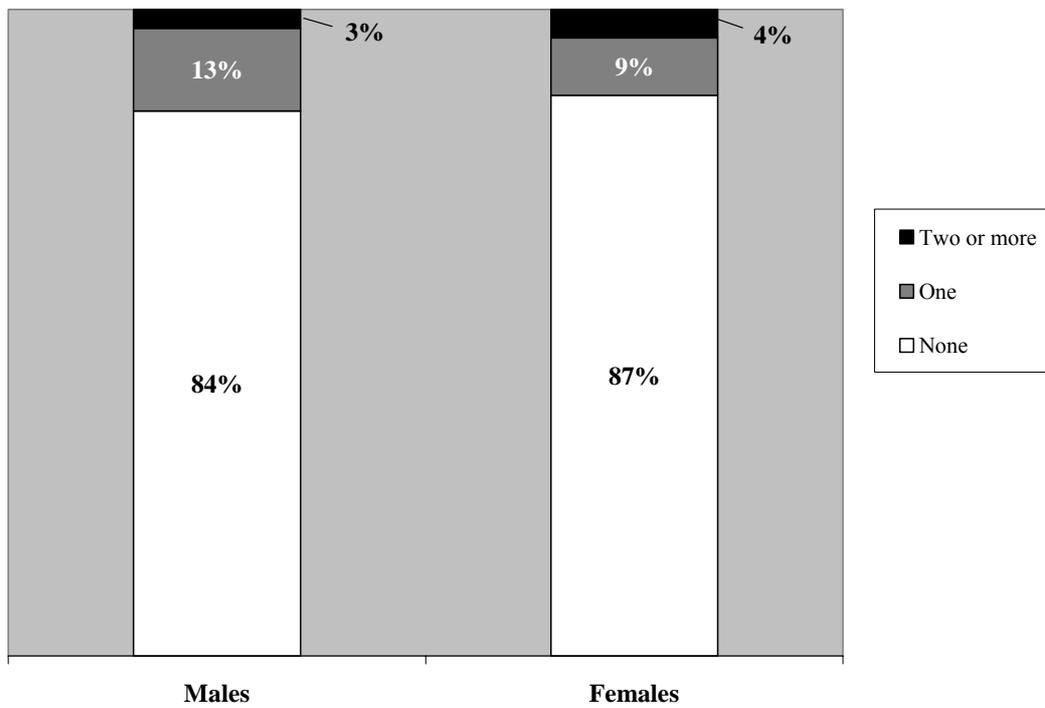


Figure 8-3. Number of Hospital Days in the Past Year among those Hospitalized by Sex



The vast majority of older Taiwanese required no emergency care in the past year (Figure 8-4). A relatively small percentage (13% of males and 9% of females) made one emergency care visit, and very few (3% of males and 4% of females) had two or more emergency care visits.

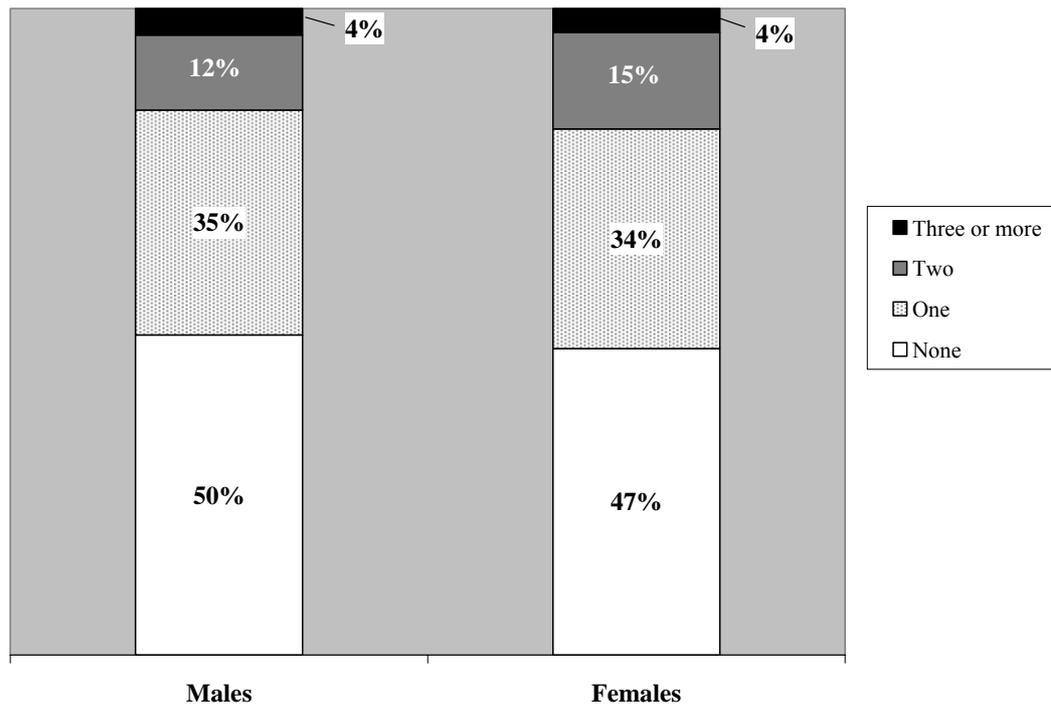
Figure 8-4. Number of Emergency Care Visits in the Past Year by Sex



Medication Use

Roughly half of older Taiwanese take no long-term medications (Figure 8-5). Another third use one medication, while less than one-fifth take multiple medications.

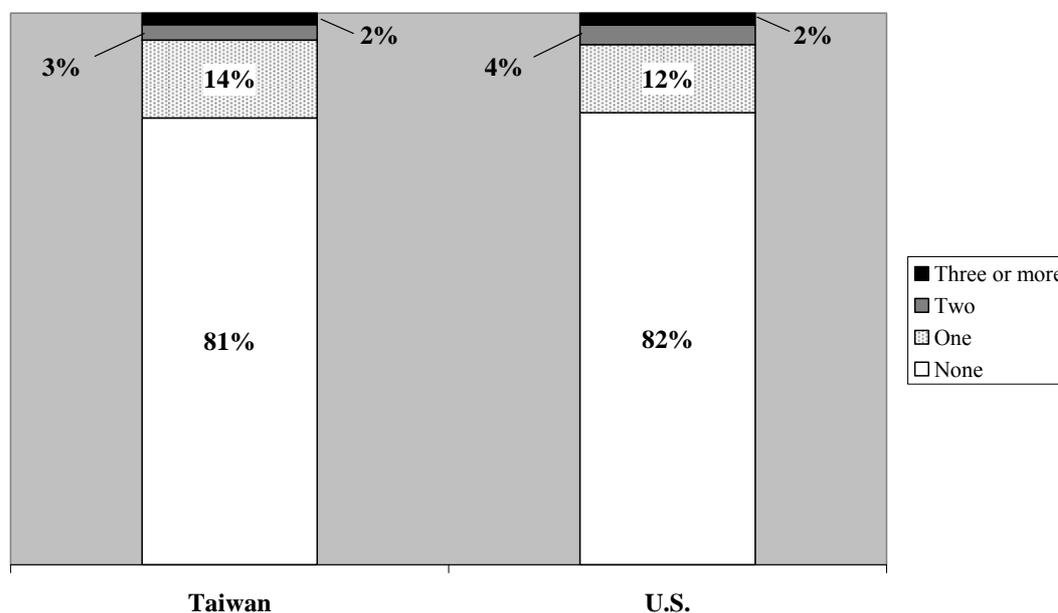
Figure 8-5. Number of Long-Term Medications by Sex



Comparisons with the United States

Data for the U.S. come from the 1998 National Health Interview Survey (NHIS). In order to match the age category used in the U.S. data, we restrict the SEBAS sample to those aged 65 and older. The U.S. data are standardized to match the sex distribution of the weighted SEBAS sample (aged 65+). As shown in Figure 8-6, the number of hospitalizations among the elderly is practically identical in the two countries. The vast majority had no hospitalization in the past year, while only 2% of elderly, either Taiwanese or American, were hospitalized more than twice.

Figure 8-6. Number of Hospital Stays in Past Year among those aged 65 and older, Taiwan and the United States



Source of US data: Blackwell DL, Collins JG, and Coles R. (2002). Summary health statistics for the U.S. population: National Health Interview Survey, 1998 (Table 19). Vital Health Statistics 10(207):56-57. Hyattsville, MD: NCHS. Sex standardized to Taiwan SEBAS distribution (weighted).

Summary

Relatively few older Taiwanese have high levels of health care utilization. Only about a third of older Taiwanese report having had a health examination in the past year, two-thirds of which were paid for by National Health Insurance. About half use at least one long-term medication, while fewer than one in five take multiple medications. Fewer than one in six men and one in eight women say they were hospitalized in the year prior to the survey and a similar proportion report an emergency care visit. The number of hospitalizations (per person) among the elderly (age 65+) population is virtually identical in Taiwan and in the United States.

Chapter 9 : Socioeconomic Status

In this chapter, we investigate relative socioeconomic status as subjectively evaluated by respondents. In addition, we investigate how educational attainment relates to stress level and functional mobility. All of the data presented in this chapter are based on self-reports.

Relative Socioeconomic Status

During the SEBAS interview, respondents were shown a picture of a ladder with ten rungs. The interviewer told them:

“Think of this ladder as representing where people stand in Taiwan. At the top of the ladder are the people who are the best off — those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst-off — who have the least money, least education, and the least respected jobs or no jobs.

“The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

“If you consider your current situation and compare it with all other people in Taiwan, where would you place yourself on this ladder?”

Figure 9-1 shows the distribution of responses to this question. The most common ranking reported by respondents was 5 out of 10; more than one-quarter (27%) of both men and women placed themselves in the middle (rung 5) of the ladder. Yet, nearly six in ten respondents placed themselves lower on the ladder, and 14% of males and 15% of females positioned themselves on the lowest rung of the ladder, representing those worst off in Taiwan. Relatively few older Taiwanese rank themselves in the upper half of the ladder relative to others in Taiwan, and very few (6% of males and 4% of females) placed themselves on rung 7 or higher.

The tendency among older Taiwanese to perceive themselves as less socioeconomically advantaged than others in Taiwan may reflect reality. Given the rapid social and economic transition that occurred in Taiwan after World War II, respondents in this study (who are age 54 and older) may view their social position as low relative to younger cohorts that are highly educated and more successful economically. Alternatively, the low assessments of social position may result from a key feature of traditional Chinese culture, namely the high value placed on modesty and humility (Crittenden, 1991; Lee & Seligman, 1997).

A model of the predictors of perceived ladder position reveals that three conventional, objective measures of socioeconomic status – educational attainment, income, and status associated with the husband’s occupation – significantly predict higher rankings of social position (Goldman et al., forthcoming; see Table 9-1). Education was important not only in terms of the respondent’s own schooling, but also in terms of the educational level of the spouse and the most educated child. In addition, car ownership was associated with higher rankings.

Two social factors emerge as important predictors of subjective status: ethnicity and number of sons. In the presence of controls for objective socioeconomic status, Fukiene and

Mainlanders tend to give themselves lower rankings than their Hakka counterparts (although only the difference between Fukienese and Hakka is statistically significant). Moreover, respondents with two or more sons position themselves higher than those with no son.

Figure 9-1. Position on Socioeconomic Status Ladder Relative to People in Taiwan by Sex

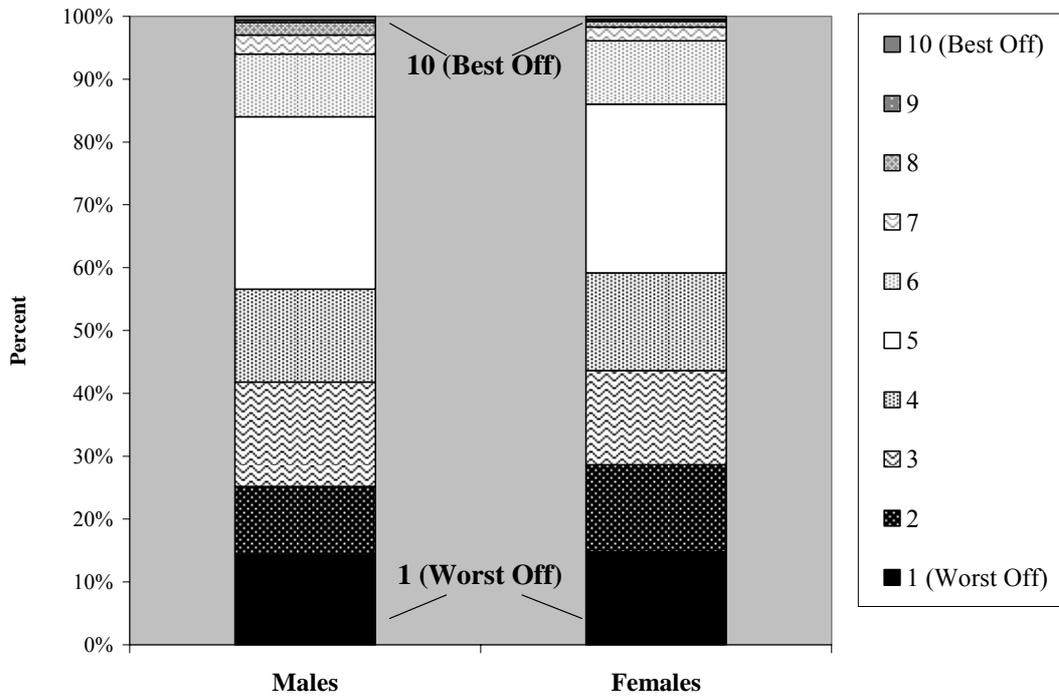


Table 9-1. Significant Predictors of Relative SES

Objective measures of socioeconomic status

- Years of schooling of respondent (+)
- Years of schooling of spouse (+)
- Years of schooling of most educated child (+)
- Annual income of respondent and spouse (+)
- Socioeconomic index for male/husband's occupation (+)
- Car ownership (+)

Social factors

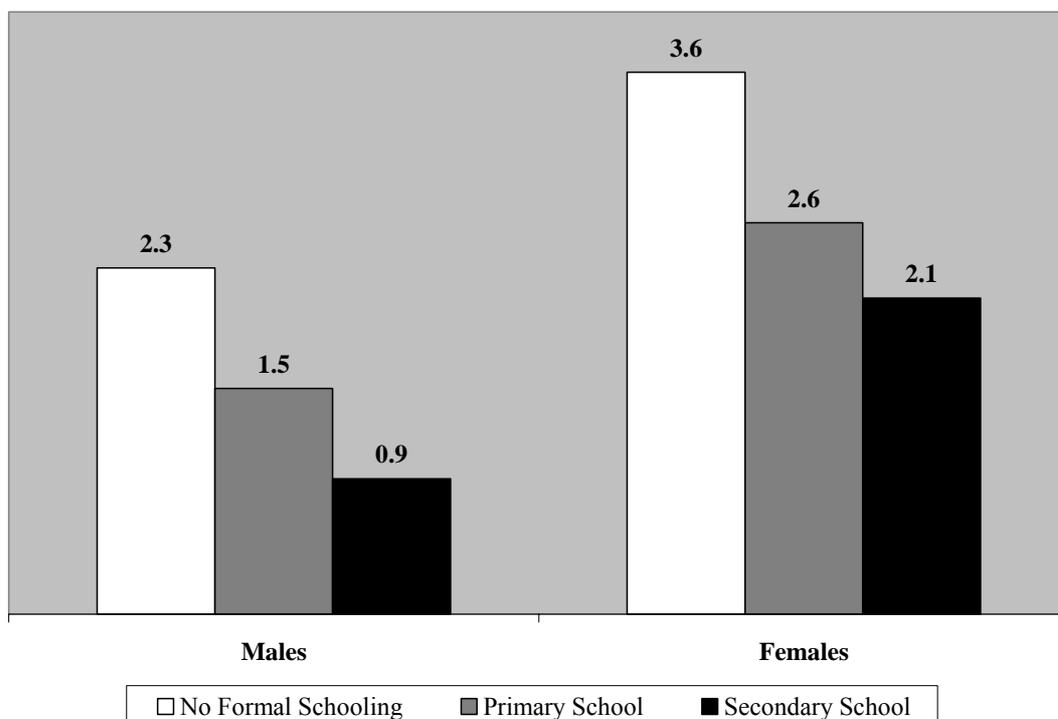
- Ethnicity (Fukienese lower relative to Hakka)
- Number of sons (2+ sons higher relative to no sons)

The Relationship between Education and Functional Mobility

Traditionally, education has held an important role in Chinese culture dating back at least as far as the Han dynasty (206 BC). Results showing that educational attainment of the respondent as well as his or her spouse and most educated child are among the most important determinants of subjective assessments of relative socioeconomic status underscore the fundamental importance of education in Taiwan (Goldman et al., forthcoming). A vast number of studies have shown that socioeconomic status is often correlated with health and mortality (e.g. Adler & Newman, 2002; Adler & Ostrove, 1999; Fuhrer et al., 2002). Therefore, it is interesting to consider whether educational attainment is related to a measure of health status: functional mobility. Because older Taiwanese women often have low levels of education themselves, we use their husband's education from which they are likely to derive social status and economic benefits. Unlike income or subjective social status, education is unlikely to be affected by health status in later life.

Figure 9-2 shows the mean number of functional limitations according to level of education. This measure of physical functioning includes six ADL (see Figure 4-3) and nine mobility tasks (see Figure 4-5), resulting in a potential range of 0 to 15 limitations. Among both men and women, higher levels of education are associated with fewer functional limitations, on average. For example, among older women, those whose husbands have no formal schooling exhibit an average of 3.6 functional limitations (of 15 possible) compared with 2.1 among those whose husbands have at least some secondary schooling. Similar figures among males (according to their own education) are 2.3 versus 0.9, respectively.

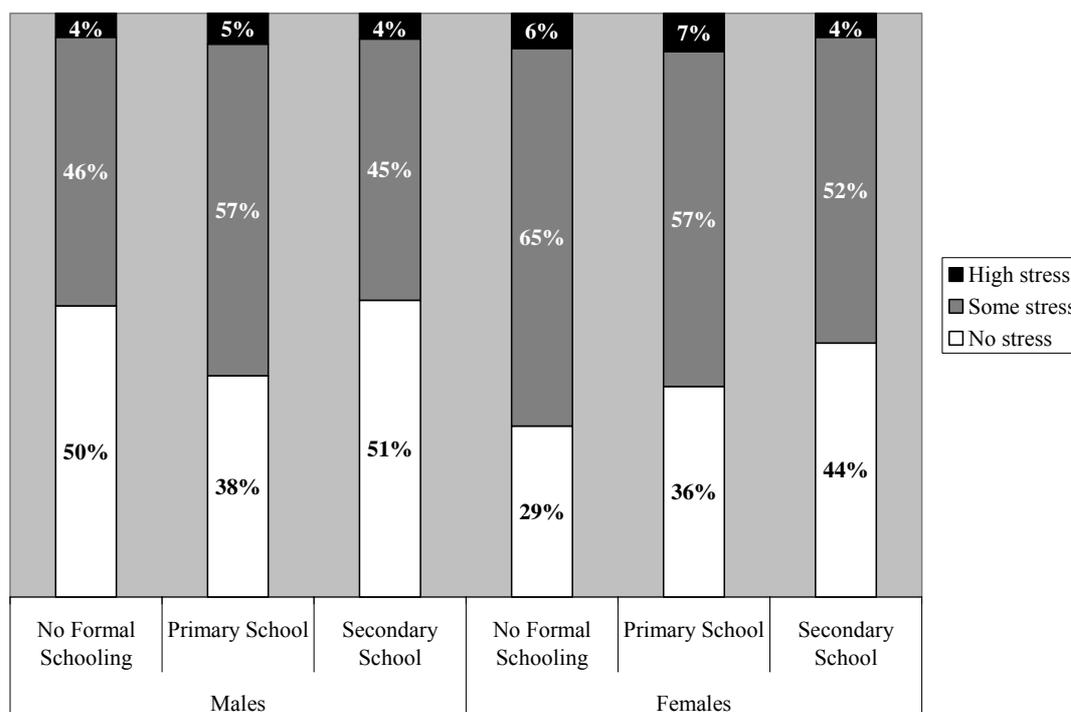
Figure 9-2. Mean Number of Functional Limitations by Male/Husband's Education



The Relationship between Education and Stress Level

One possible mechanism through which socioeconomic status may affect health is via stress level. If those with low socioeconomic status perceive more stress in their lives than those of higher status, it may have important effects on their health and well-being. Figure 9-3 shows the level of personal or family-related stress (see Chapter 6 for details regarding the measure) according to level of education. These results indicate that among women, more education (of their husband) is related to lower levels of stress, as we might expect given the inverse relationship between education and functional limitations. Among men, however, there does not appear to be a clear relationship between their own education level and their perception of stress. The highest level of stress seems to be among men with primary school education, whereas those with no schooling or with some secondary schooling have lower stress levels.

Figure 9-3. Level of Stress by Male/Husband's Education



Summary

In terms of socioeconomic status, older Taiwanese perceive themselves as ranking lower than other people in Taiwan. On a scale of 1 to 10, the vast majority rank themselves at 5 or lower, where 10 indicates those who are best off in society. Multivariate results suggest that measures of objective status such as education, income, and occupation are significant determinants of the subjective assessments. Social factors such as ethnicity and presence of sons also influence perception of social position.

Education, which continues to be fundamentally important in determining social status in Taiwan, is positively related to functional mobility among both men and women. Older Taiwanese men with higher levels of education, and women whose husbands have attained higher levels of education have fewer functional limitations than their counterparts. Moreover, among women, education (of their spouse) is related to lower levels of perceived stress, but among men there is no clear relationship between their own education and stress level.

Chapter 10 : Self-Reported Health Status

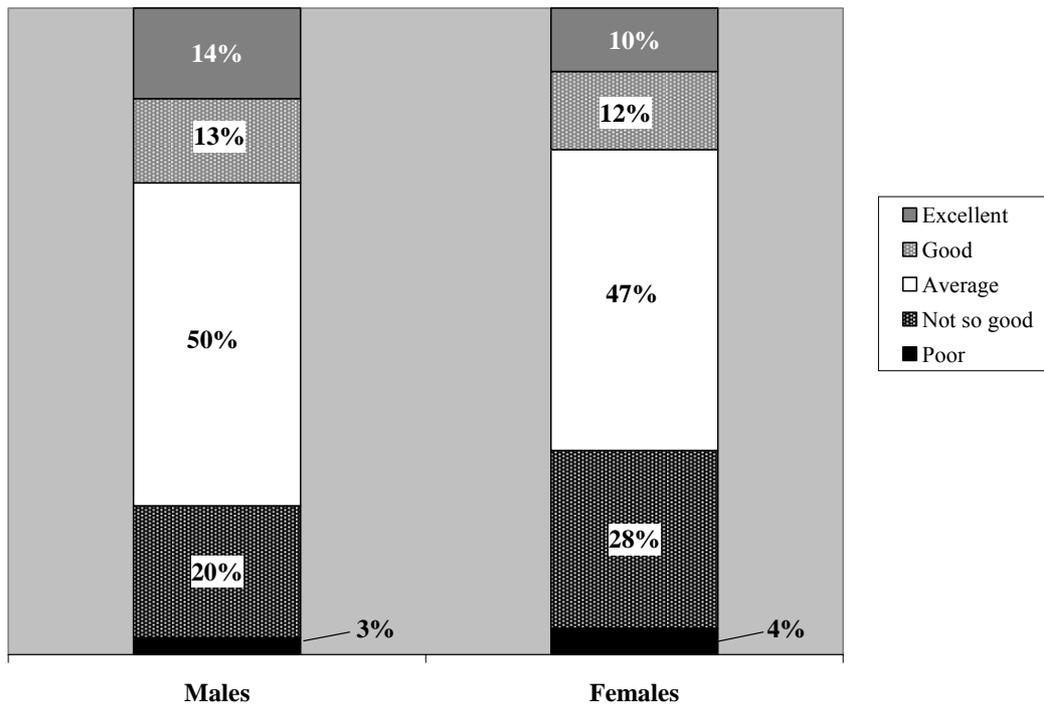
Finally, in this chapter we report respondents' perceptions of their overall health status and discuss the predictors of self-reported health status among older Taiwanese. Numerous studies in many countries have demonstrated that self-reported health status is a consistent and powerful predictor of mortality, functional decline, future morbidity, and subsequent health services utilization (e.g. Idler & Benyamini, 1997; Benyamini & Idler, 1999; Idler & Kasl, 1995; Haga et al., 1995; Wolinsky et al., 1995). The evidence suggests that these self-ratings reflect a broad assessment of health and well-being including not only physical condition, but also psychological well-being and social functioning. The self-assessments appear to capture important unobserved information: Even after adjustment for other indicators of physical condition (both self-reported and clinically-assessed), behavioral and psychosocial risk factors, and environmental factors, most studies find that this measure remains an independent predictor of subsequent health outcomes. We conclude the chapter by presenting respondents' ratings of their health relative to the previous year and relative to others their own age.

Perceptions of Overall Health Status

The measure of self-reported health status is based on a simple question: "Regarding your current state of health, do you feel it is excellent, good, average, not so good, or poor?" As shown in Figure 10-1, the most common response – comprising approximately half of respondents – is to rate their health as "average". Nonetheless, a substantial proportion of older Taiwanese rate their health as "not so good" or "poor" (23% of males and 32% of females). Only one in seven males and one in 10 females rate their health as "excellent".

A model predicting these self-ratings of health indicates that various measures of physical health are important determinants of self-rated health (Goldman et al., forthcoming; see Table 10-1). In particular, mobility limitations, number of chronic conditions, a debilitating fall or injury in the prior year, medication use, level of pain, and incontinence, all of which are based on self-report, have substantial effects. In addition, a number of clinical risk factors, based on physical examination, also predict self-ratings of health. The most important of these are body mass index, ratio of total to HDL cholesterol (for men but not women), and presence of the APOE ϵ 4 allele (for women but not men). The importance of these biomarkers may result from the respondents incorporating their knowledge of health risk factors into their self-ratings. Nonetheless, that explanation is unlikely to account for the effect of APOE genotype because respondents are unlikely to know their genotype. This result suggests that the negative impact of the ϵ 4 allele may extend beyond the two conditions – heart disease and Alzheimer's disease – most frequently identified.

Measures of psychological well-being are also important predictors of self-reported health. Depressive symptoms as well as personal and family-related stress and anxiety (see Chapter 5 and 6 for details regarding these measures) both have negative effects on self-ratings.

Figure 10-1. Self-Reported Health Status by Sex

Even after controlling for clinical and self-reported measures of physical and psychological health, various measures of health behaviors, social participation, and socioeconomic status remain associated with self-ratings. A healthy diet and frequent exercise are associated with better health ratings. However, contrary to expectation, so is daily smoking. Among women (but not men), greater participation in social activities is associated with better health ratings. Finally, respondents with higher subjective assessments of their social position (see Chapter 9 for details regarding this measure) report better health status.

Table 10-1. Significant Predictors of Self-Reported Health StatusSelf-reported measures of physical health

- Number of current illnesses or chronic conditions (-)
- Number of mobility limitations (-)
- Fall or injury in the past year that caused problems walking or bathing (-)
- Number of long-term medications (-)
- Usual level of pain or discomfort (-)
- Trouble with incontinence (-)
- Number of hospital days in past year (-)

Clinical Risk Factors

- Body Mass Index (curvilinear, low and high BMI associated with lower self-reported health status)
- Ratio of total to HDL cholesterol (-, men only)
- Ratio of cortisol to DHEA-S (-, men only)
- APOE ε4 allele (-, women only)

Psychological well-being

- CES-Depression scale (-)
- Stress/anxiety index (-)

Health-related behaviors

- Eats at least three vegetables and two fruits daily (+)
- Frequency of exercise (+)
- Smoked daily in past six months (+)

Social and socioeconomic variables

- Number of social activities participates in (+, women only)
- Subjective socioeconomic status ladder (+)

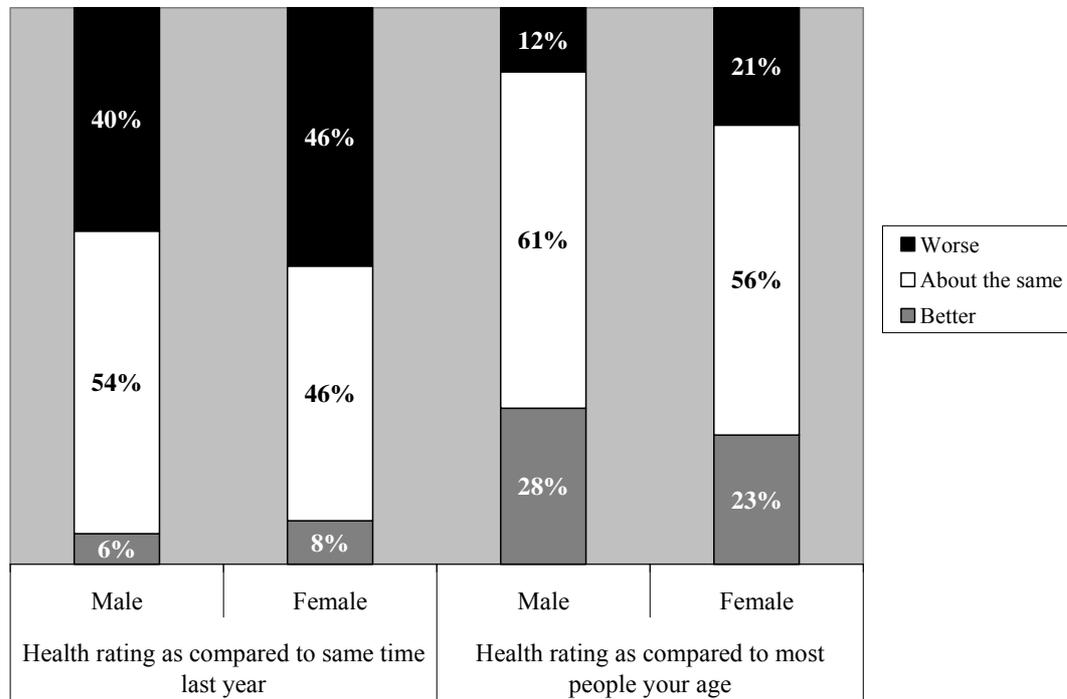
Demographic characteristics

- Age (-, but diminishing effect at higher ages)
- Female (-)

Comparative Ratings of Health Status

In addition to overall health status, respondents were asked: “Compared to this time last year, is your health better, about the same, or worse?” As shown in Figure 10-3, a large percentage of these older Taiwanese reported that their health had declined in the prior year; 40% of males and 46% of females gave this response. Not surprisingly, at this stage of life, very few reported an improvement in their health.

Respondents were also asked to rate their health relative to most people their age. The majority reported their health to be about the same as others in their age cohort. Women were more likely than men, however, to report that their health was worse (21% vs. 12%, respectively).

Figure 10-2. Comparative Health Ratings by Sex**Summary**

Nearly one-quarter of older Taiwanese men and one-third of the women rate their current health status as “not so good” or “poor”. Because this measure incorporates multiple domains of health, these results may be more indicative of overall well-being among older Taiwanese than observed physical and mental condition. Analyses suggest that self-ratings of health are related not only to physical and mental health, but also to health-related behaviors, social participation, and perceptions of relative socioeconomic status.

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摘 要

20 世紀的後半期，台灣民眾的預期壽命增加約 20 年(美國人口資料局，2001)，65 歲以上人口從 2.5% 上升至 9%，幾乎成長 4 倍，預計到 2020 年將會增加至 14%(Li, 1994)。老年人口的身心健康與安適狀態，是評估其生活品質的重要指標，並能藉此得知數量漸增的老年族群需要哪些公共設施，才能滿足其需求。

本報告為「台灣老人健康之社會因素與生物指標研究」(Social Environment and Biomarkers of Aging Study, 簡稱 SEBAS)的結果報告。研究對象為 2000 年當時年滿 54 歲以上中老年人之全國代表性樣本(不包括山地鄉)。本研究收集的資料廣泛，不只包括個案自述的身體、心理與社會安適狀態，也包含許多理學檢查與實驗室分析等臨床資料。

健康風險之臨床評估

由台灣中老年人的臨床評估結果，有幾項重要的發現。首先，許多台灣老年人¹ 有心血管疾病與中風的危險因子，特別是高血壓、低密度脂蛋白較高、高密度脂蛋白較低，以及身體質量指數(BMI)過高等。與美國資料比較顯示，台灣中老年人的健康風險概況較美國佳，不過高血壓問題稍微嚴重，尤其是女性中老年人。此外，健康指標的性別差異情況在台灣較美國為小。女性在高血壓、膽固醇、血糖濃度與身體質量指數等各項指標的風險高於男性，換言之，台男性不利於健康的因素較不嚴重。

自評健康與安適狀態

個案自述資料則提供有關台灣中老年人之生理、認知、心理與社會安適狀態。2000 年台灣地區十大死因前三位依序為惡性腫瘤、腦血管疾病(如中風)與心臟疾病(行政院衛生署，2000)，在 SEBAS 個案當中，自述曾罹患惡性腫瘤或中風的比例很小，但心臟疾病的比例卻相當高，糖尿病(第五大死因)盛行率也較高。值得注意的是，上述四種疾病在女性的盛行率都高於男性。此外，較多女性自述有高血壓的問題，而高血壓通常是其他更嚴重疾病的前兆，此與 SEBAS 健康檢查的結果相符。另一方面，男性自述有肝病、腎病及呼吸道疾病的比例較高，而這些都是名列台灣地區十大死因中的疾病；女性較容易出現不易致命，但卻會限制行動、增加疼痛或造成身體不適的疾病，如關節炎、脊椎骨骨刺及白內障等，而男性比女性更容易罹患痛風。整體而言，大約三分之二的台灣地區中老年人自述目前至少患有 12 項慢性疾病當中的一種，且 15% 男性與 18% 女性罹患慢性病在 3 種以上。根據個案自述慢性疾病與臨床評估結果相互比較之效度分析結果，個案自述會低估實際疾病之盛行率，然而不同疾病被低估的程度則不盡相同。

與美國資料比較顯示，台灣地區中老年人之惡性腫瘤、中風與心臟病盛行率遠低於美國，但糖尿病盛行率略高，且只有女性的盛行率較高，台灣女性的糖尿病盛行率幾乎是美國女性的 2 倍，台灣男性之糖尿病盛行率則略低於美國男性。

在身體功能方面，台灣地區中老年人無法進行日常生活活動功能(Activities of Daily Living, ADL)的情形並不多，但女性至少有一項 ADL 障礙的比例是男性的兩倍(分別為 6% 與 3%)。在工具性日常生活活動功能 (Instrumental Activities of Daily Living, IADL) 方面，女性有 IADL 障礙的比例同樣高於男性(至少有一項 IADL 障礙的比例，女性為 41%、男性 17%)。相當高比例的台灣中老年人會有某些行動上的限制；四分之三的女性以及半數男性在站立或短距離跑步等身體活動上有困難；女性也比男性更容易跌倒或受傷，並因此而造成不良的後果。

¹ 除非特別說明，否則此份報告所述之「台灣老年人」是指 54 歲以上的人口，亦即 SEBAS 的抽樣底冊。

在認知功能方面，台灣地區中老年人認知功能不良(指記憶、知識、計算等問題的正確率低於 50%)的比例相當低，但是女性認知功能不良的比例(14%)高於男性(3%)。有五分之一的女性以及略高於三分之一的女性，無法正確回答至少三分之二的認知功能問題，但在高度認知功能方面(正確率高於 80%)，男女之間沒有明顯差異。

憂鬱量表的評估資料顯示，很多台灣中老年人有較高之憂鬱分數(10 分以上)，尤其是女性(25%，男性為 15%)。相較於男性，女性較不易感到有較高的個人控制力或自我生活控制力，覺得自主力低的比例為男性的 2 倍。一般來說，大部分的台灣中老年人都滿意或至少滿足於目前的居住狀況。依性別來看，男性以只與配偶同住者的滿意度最高，女性(不論是否有偶)則是與子女或他人同住者滿意度最高。

只有少數台灣中老年人認為在個人或家庭生活中面臨著高度壓力，但不論在男性或女性，認為有高度壓力者之功能障礙指數也較高，其因果關係仍有待釐清。

在環境挑戰方面，絕大多數台灣中老年人都經歷了 1999 年的 921 大地震，不過因此而遭受到房屋或其他財物受損、暫時遷離或因地震受傷的比例極低。大部分的中老年人對他們居住的社區感到安全，也很少會擔心自身或家人的安全，在受訪前的一年當中，只有少數曾因犯罪事件而受害或遭遇歹徒詐騙，但相當多人認為社會整體治安狀況不佳。

健康行為方面的資料顯示，只有半數左右的台灣中老年人攝取均衡的飲食，大約半數有規律運動的習慣。超過三分之一的男性每天抽菸，而經常喝酒或嚼檳榔者則相對較少(12%、9%)，女性則幾乎都沒有這些行為。就社會參與程度來看，超過半數的男性與 6 成女性沒有參加任何社團或活動。

經常使用醫療照護服務的中老年人並不多。只有三分之一的人在過去一年曾做過健康檢查，其中三分之二是接受全民健保的成人預防保健服務。半數左右的中老年人長期服用至少 1 種藥物，長期服用多種藥物的比例則不到五分之一。17%的男性與 12%的女性，在訪查前的一年當中曾經住院，使用急診的比例也類似。在住院次數方面，台灣與美國的老年人(65 歲以上)，均有近 2 成的比例在一年內曾經住院，住院次數百分比之分布也極為類似。

在社會經濟地位方面，台灣地區中老年人普遍認為自己的社會經濟地位低於其他人口。在 1-10 級的 10 分自評量表中，絕大多數老年人認為自己的社會經濟狀況在 5 分以下。多變項分析的結果顯示，客觀條件如教育、收入及職業，為此主觀衡量指標之顯著決定因素；而社會因素如族群別、有無兒子等也會影響個人所感受到的社會地位。在台灣地區，教育程度是決定社會地位的基本要素，不論在男性或女性，教育程度也與身體功能呈正相關。相較之下，男性教育程度較高者，或是女性其配偶教育程度較高者，較不會有身體功能障礙之問題。對女性而言，配偶之教育程度較高者，自覺壓力程度也較低，但在男性則未發現教育程度與自覺壓力間之明顯關聯。

最後，有關於整體的健康狀況，近四分之一的中老年男性與三分之一之中老年女性，認為自己目前的健康狀況為「不太好」或「很不好」。因為這項評估包含健康的多重面向，其結果可能比觀察到的生理與心理狀態，更能顯示台灣地區中老年人的整體安適狀況。分析顯示自評健康狀況不只與生理與心理健康有關，也和健康行為、社會參與，以及其個人所感受到的相對社會經濟地位相關。

相關政策

本研究資料顯示，根據健康危險因子、慢性疾病盛行率、身體功能、認知功能、心理安適狀態、感受壓力程度以及自評健康狀況之評估結果，大部分的台灣地區中老年人都相當健康。雖然其平均餘命及主要死因都與美國中老年人相似，但在許多評估項目上，台灣中老年人之健康危險因子較美國中老年人少。

然而，相當多的中老年人亦面臨了可能降低其安適狀態與生活品質的狀況。這些結果顯示應將防治重點放在可治療或可改變的健康危害因子(例如高血壓、高膽固醇、身體質量指數過高及憂鬱傾向)上，以減少此族群未來罹患疾病及死亡的風險。健康的飲食、規律的運動與男性減少抽菸均有益於中老年人的健康促進。

整體而言，台灣中老年女性在臨床健康評估、危險因子、認知功能與心理安適狀態方面均較男性為差，此性別差異，不單只是樣本中女性的年齡分布較男性高所造成的結果。雖然女性在這些方面呈現較居於劣勢之狀況，但其平均餘命卻高於男性(行政院內政部，2004)。曾有研究人員試圖解釋這項矛盾，認為可能是因為慢性疾病性別分布差異之故(Case & Paxson, 2004)。在許多國家，女性比男性容易有一些健康上的症狀，這些症狀可能引起身體不適、降低生活品質但較不具致命性。例如，台灣中老年女性比男性更容易有關節炎、風濕症、身體功能障礙、認知功能不良及抑鬱症狀等問題。

由本研究之台灣地區中老年樣本也發現，女性在可能危及生命之糖尿病與心臟病方面，問題較男性嚴重。其他研究也發現，自述疾病率的性別差異，是因為女性自述罹患疾病的意願較高之故(Case & Paxson, 2004; MacIntyre et al., 1999)，但這項自我評量的偏差並不能做為臨床健康評估指標上性別差異的解釋。健康檢查的結果顯示，女性在與心血管疾病相關的危險因子(例如高血壓、膽固醇過高、血糖過高以及身體質量指數過高)上均較男性高。美國一項研究發現，在心血管疾病或肺部疾患的患者當中，男性的死亡率遠高於女性，此可能因為男性所患有的症狀較為嚴重之故(Case & Paxson, 2004)。因此，即使存在某種健康危險因子或罹患相同的疾病，台灣的中老年女性仍比男性有較高存活率。

中老年人所患之疾病即使不具致命性，仍然會影響其本身的生活品質，並造成家庭及社會之負擔。因此，健康政策及計畫的目標，並不僅止於增加老年族群的存活率，更應著重於如何增進其整體之健康與安適狀況。

第一章：前言

20 世紀後半期，台灣經歷了人口、社會與經濟的快速變遷，自農業社會轉變成高度都市化、工業化的社會，居住在城市的人口百分比成長近三倍，農業勞動人口則從 56% 降至 14%，國民平均所得增加了 9 倍以上(Hermalin, Liu & Freedman, 1994)。從 1952 至 2000 年間，平均餘命增加約 20 年，總生育率減少了將近 5 胎(美國人口資料局，2001)，65 歲以上的老人佔人口組成百分比從 2.5% 升高至 9%，幾乎成長為 4 倍，據估計到 2020 年將增加至 14% (Li, 1994)。老年人口的身心健康與安適狀態，是評估其生活品質的重要指標，為探討老年族群增加後，對於公共福利與服務措施之需求，以提供未來規劃社會與衛生政策滿足其需求，必須進一步瞭解其整體健康與安適狀態。

本報告為「台灣老人健康之社會因素與生物指標研究」(Social Environment and Biomarkers of Aging Study, 簡稱 SEBAS)的結果報告。研究對象為 2000 年當時年滿 54 歲以上中老年人口之全國代表性樣本(不包括山地鄉)。本研究收集的資料廣泛，不只包括個案自述的身體、心理與社會安適狀態，也包含許多理學檢查與實驗室分析等臨床資料，故能提供台灣老人族群的健康與安適狀態之豐富資料。

報告第二章將說明研究設計，內容包括抽樣過程與臨床資料收集之標準作業流程等。第三至十章則提供有關台灣 54 歲以上中老年人健康與安適狀態資料之分析結果。本報告中檢視了許多與身體健康狀態有關之指標，然而安適狀態並不僅止於沒有疾病的生理狀況；廣義的健康也包含精神、心理與社會層面。因此，本報告亦涵蓋認知功能、心理安適狀態、壓力與環境挑戰、健康相關行為，以及社會參與等各方面的資料。此外，本研究中也收集醫療服務的利用情形，可提供健康照護政策有關單位及人員參考。全民健保自 1995 年 3 月 1 日開始實施，迄本計畫資料收集當時已逾 5 年，透過這些資料可以檢視老年族群接受預防保健服務的情況。本報告中亦分析社會經濟狀況與安適狀態評量項目之間的關係。最後，則探討個案對整體健康狀況之自我評估結果，這項指標向來被認為可對個案未來疾病發生或死亡提供有效預測。

第二章：研究設計與資料收集標準作業

「台灣老人健康之社會因素與生物指標研究」(簡稱 SEBAS)為「台灣地區中老年身心社會與生活狀況長期追蹤調查」之延伸計畫，該項長期追蹤調查係由台灣省家庭計畫研究所(行政院衛生署國民健康局前身機構之一)主辦，並與美國密西根大學人口研究中心以及老年研究所共同合作辦理。SEBAS 即是以此 10 年長期追蹤調查為基礎，從 1999 年完訪個案中抽出次樣本群，蒐集生物指標與健康檢查等相關資料。這些臨床資料可與 SEBAS 問卷面訪所得到的資訊(包括：自評健康、安適狀態、社會環境與生活挑戰)互為補充。本計畫對於個案權益之保護事項，經美國普林斯頓大學、RAND 基金會、喬治城大學、加州大學洛杉磯分校等機構，以及台灣省家庭計畫研究所之倫理審議委員會(Institutional Review Boards, IRB)審核通過。

抽樣設計

「台灣地區中老年身心社會與生活狀況長期追蹤調查」起始於 1989 年，是一項以 4049 位 60 歲以上人口之全國代表性樣本所進行的長期追蹤調查，樣本個案包括居住在社區以及機構老人，調查完訪率達 92%²。其抽樣設計採用分層三階段等機率抽樣方法，第一階段先隨機選取 56 個鄉鎮市區(即初抽單位 primary sampling units, PSU)；第二階段在每個 PSU 中，隨機選取樣本鄰；最後在每個樣本鄰中，隨機選取 2 位符合條件的樣本個案(細節請見 Hermalin, Liang, and Chang, 1989)。

此項長期追蹤調查於 1996 年時再由 53 個 PSU(其中 40 個與 1989 年相同)進一步擴大加入 2462 位 50 至 66 歲具全國代表性的中老年樣本，因此，1996 年的調查對象包含台灣地區 50 歲以上中老年樣本個案。這些樣本個案於 1999 年再次接受訪問，共有 4440 位完成訪問。大部分個案仍居住在原抽樣本鄉鎮市區之內，但也有略多於十分之一比例的個案搬遷至其他非樣本鄉鎮市區。

2000 年則由 1999 年調查的完訪個案隨機選取次樣本參加本項「台灣老人健康之社會因素與生物指標研究」，其抽樣方法為 1989 年抽樣設計的延伸，以三階段抽樣之初抽單位(鄉鎮市區)為基礎，將 1999 年調查時搬遷至其他非樣本鄉鎮市區的 509 位個案，依照其於 1999 年受訪當時之現住地，與鄰近之原抽 PSU 合併，或建立一個新增的 PSU，故抽樣單位包括原抽 PSU 與新增之 PSU。再將各 PSU 分成大城市(院轄市、省轄市)、小城市(縣轄市)、鎮與鄉共四層，從這幾層中分別依都市地區(大城市、小城市) 1/2 與鄉村地區(鄉、鎮) 1/3 之機率抽選樣本鄉鎮市區，總計抽選出 27 個原抽 PSU 與 10 個新增 PSU。所有 1999 年調查時居住於中選 PSU 的樣本個案都納入訪問。由於 1996 年新納入調查的中老年樣本其抽樣比例，相對低於原於 1989 年所抽選的老年樣本，故 2000 年 SEBAS 之抽樣比例同樣以老年樣本較高。

雖然 SEBAS 所抽選出的樣本個案數總計 1713 案，但只有 1698 位被列為應訪對象，其餘 15 位則因居住之新增 PSU，距離任何一家進行個案健康檢查之合作醫院均太遠之故而未列入訪查。SEBAS 實地訪查係於 2000 年 7 月至 12 月間進行，共有 1497 位個案接受面訪(佔老年存活個案之 93%與中老年存活個案之 91%)。超過 90%的面訪是由樣本個案本人回答，59 人由代答者協助回答，另有 81 人完全由代答者(例如配偶、子女)回答。除了表 2-2 以外，其他所有圖表中所顯示的資料，均考量都市地區或高年齡層個案之抽出機率較高而做了加權調整。

² 此樣本排除台灣地區之山地鄉(也就是抽樣底冊不包括大部分為原住民族群的 30 個山地鄉)。

個人問卷面訪

SEBAS 之問卷面訪是由當地具知名度及聲望的公衛護士負責執行，面訪資料收集項目包括慢性疾病、身體功能、心理狀態、認知能力、醫療服務利用情形、社會網絡與支持、生活壓力事件、社會經濟地位與人口學特性等資料。

在訪問結束後，訪問員會評估個案的健康狀態，以決定是否適合參加健康檢查及生物指標收集(收案標準見表 2-2)。條件符合者，則會徵詢其至附近醫院進行健康檢查之意願。訪員也會解釋檢查過程、預約檢查時間，以及在必要時協助安排交通。

健康檢查與生物指標收集

在訪問工作開始之幾個月以前，家庭計畫研究所人員會確認在中選的 PSU 之內或其鄰近地區可能參與計畫執行的醫院名單(例如有良好聲譽、交通方便、有參與本項計畫的意願與能力)，最後共選出 24 家合作醫院(其中有些醫院負責一個以上 PSU)。在預約醫院健康檢查的前一天傍晚，一名家庭計畫研究所人員與一名公衛護士會將集尿桶送到個案家中，解釋正確的尿液收集步驟並回答相關問題。同時，也提供 12 小時尿液收集書面說明，並取得個案簽署之接受健康檢查同意書，以及提醒個案從當天午夜至健康檢查完成前均不可進食。因為神經內分泌物質，例如皮質醇(cortisol)的濃度，呈現明顯的日間變異，所以 12 小時的收集時間是很重要的。整夜的檢體可將個體間因日間活動造成的差異減至最小，提供基礎神經內分泌濃度的完整測量。

在醫院健康檢查當天的早晨，家庭計畫研究所人員會到個案家中取回 12 小時尿液檢體，並陪伴個案至醫院。個案到醫院之後會由 7 名工作人員所組成工作團隊，統籌辦理血液及尿液檢體之前處理，健康檢查紀錄表部份內容之訪問，以及必要表件之登錄等。表 2-1 為 SEBAS 所收集的各項生物指標與臨床檢測項目。個案須回答疾病史、家族病史、健康相關行為，以及目前長期服用的藥物等問題。工作人員也會確認個案是否確實遵照尿液收集步驟，是否自午夜開始禁食，或是否有不適合抽血的健康問題及狀況。此外，工作人員針對前一晚核閱面訪問卷時，所發現之不完整或問卷內容前後不一致的問題進行補訪。接下來，個案須收集隨機尿液檢體，由醫院抽血人員抽血，並由護士測量身高、體重、腰圍、臀圍以及血壓。在個案抵達醫院至少 20 分鐘後，採坐姿間隔 1 分鐘以水銀血壓計測量右臂血壓二次。最後，由一名醫師為個案進行健康檢查，包括第三次血壓之測量、腹部超音波檢查與衛生教育諮詢等。為提供分析之用，血壓值是取前二次測量的平均值。檢查結束後，供應個案早餐並贈與一份營養補充劑小禮物，並由工作人員陪同個案返家。

在個案至醫院健康檢查期間，聯合檢驗所 (Union Clinical Laboratories, 簡稱 UCL) 每天中午以前都會派員至醫院收取血液及尿液檢體，除負責將檢體立即轉送到台北實驗室，並遵照標準實驗室程序進行後續檢驗分析，在二週內提供結果報告給家庭計畫研究所。除了 UCL 例行的標準化與校正，醫院執行健康檢查期間，工作人員每間隔一段間也會安插雙倍量或三倍量之盲目複本檢體予 UCL 以及美國 Quest Diagnostics 公司進行分析。這些複本檢體分析結果顯示實驗室間 (inter-lab) 與實驗室內 (intra-lab) 信度佳，UCL 的實驗室內相關性達 0.80 以上，UCL 與 Quest Diagnostics 實驗室間的相關性達 0.76 以上。

在健檢工作結束數週後，個案會收到健康檢查結果報告 (血液與隨機尿液檢驗結果，與理學檢查的發現等)。結果異常且需要立即加以注意者，則強烈鼓勵其就醫接受進一步檢查，並告知其醫院所提供的健康諮詢資訊。

表 2-1 2000 年 SEBAS 收集之生物指標與臨床檢測項目

評估項目

身體檢查

測量：身高、體重、腰臀圍

血壓（收縮壓及舒張壓，共測量 3 次）

胸部、心率、呼吸、乳房、腹部、手臂、腿

淋巴與甲狀腺異常檢查（與全民健保檢查相似）

腹部超音波（肝臟、胰臟、膽、腎臟）

血液檢體(禁食)

總膽固醇、高密度脂蛋白 (Total and HDL cholesterol)

糖化血紅素 (glycosylated hemoglobin)

脫氫異雄固酮 (DHEA-S)

脂蛋白元 E (APOE) 之基因型

免疫功能與生長因子：IL-6, IGF-1

其他常規血液檢查（例如：血球計數、血紅素、血糖、三酸甘油酯）

12 小時尿液檢體

皮質醇 (Cortisol)

正腎上腺素 (Norepinephrine)

腎上腺素 (Epinephrine)

多巴胺 (Dopamine)

肌酸酐 (Creatinine)

本研究完成問卷面訪的 1497 名個案中，有 1023 人接受健康檢查（佔中老年樣本的 75% 與老年樣本的 61%）。如表 2-2 所示，有 7% 的個案因本身的健康情況，不符合接受檢查的條件。拒絕檢查者佔 24%，主要原因包括：個案認為自己很健康不需要檢查、檢查太麻煩、剛接受過健康檢查、沒有時間，或安排健康檢查期間人不在。至於參加健康檢查的個案，其順從度相當高，除了 10 個人以外，所有個案均遵守尿液收集步驟、提供適合分析的足量血液，並完成健康檢查。

表 2-2 未參加健康檢查與生物指標收集的原因

未參加的原因	人數	訪談樣本百分比
<u>不符合健康檢查的條件†</u>	111	7.4
住在安養院	10	0.7
老邁、病弱	61	4.1
插導尿管、或包尿布	23	1.5
洗腎病患	7	0.5
其他	33	2.2
<u>拒絕參加‡</u>	363	24.2
不願意或無法接受醫師檢查	330	22.0
不願意或無法抽血	240	16.0
不願意或無法留尿	218	14.6
不願意或無法參與的原因：		
安排健康檢查期間人不在	23	1.5
安排健康檢查期間沒空	57	3.8
個案剛做過檢查	84	5.6
個案自己經常或固定在做檢查	75	5.0
個案自認為健康，不需要檢查	102	6.8
個案家人認為不需要檢查	36	2.4
個案年邁或行動不便	26	1.7
無人陪同	10	0.7
害怕抽血	32	2.1
嫌麻煩	86	5.7
怕坐車或會暈車，不願意出門	11	0.7
害怕檢查出不好的結果	15	1.0
其他原因	34	2.3
沒有說明原因	2	0.1
如果將來安排醫護人員到家中，願意參與檢查	99	6.6
<u>未參加者總人數</u>	<u>474</u>	<u>31.7</u>

† 樣本個案可能有一種以上的健康問題，因而不符合健康檢查的條件。

‡ 363 位拒絕參加者，其拒絕之理由可複選。

這些臨床資料可提供心血管疾病、下視丘—腦下垂體—腎上腺 (hypothalamic-pituitary-adrenal, HPA) 軸活性、交感神經系統 (sympathetic nervous system, SNS) 活性之已知危險因子評估。所選用的特定指標，與壓力經驗及慢性疾病 (包括心血管疾病、糖尿病、記憶障礙與抑鬱情形) 間已有廣為確立之關聯，此與美國最近兩項以人口群為基礎的調查 (population-based)³ 結果相同 (Seeman et al., 1997; Singer & Ryff, 1999)。另外研究也取得遺傳標記—脂蛋白元 E (apolipoprotein E, APOE)，文獻指出此基因的 $\epsilon 4$ 對偶基因，可能是晚發型阿茲海默症與缺血性心臟病的重要危險因子 (Ewbank, 1999)。

³ 這些研究雖以人口群為基礎，但不具全國代表性。

參與健康檢查預測因素

針對參與本計畫健康檢查預測因素之多變異數分析(multivariate analysis)結果，即使控制自評健康狀態與身體功能差異，70 歲以上個案參加檢查的可能性，遠低於較年輕者(Goldman et al., 2003)。性別、教育程度與工作狀態，與參加健康檢查無顯著關係。未與家人(配偶、子女或孫子)同住者，參加檢查的比例也較與家人同住者低。而社會活動的參與，與是否參加健康檢查有正相關。和之前最近一次健康檢查間隔時間，與參加檢查並無顯著關係。與調查計畫書所假設之狀況一致，日常生活活動限制，與參加健康檢查之間呈現負相關。個案自評健康狀況良好者(普通、不太好、很不好以外的回答)，比起自評中等者，參加的比例也較低，此係因最健康者與最不健康者，不參加調查的比例都較高，因此參加健康檢查者整體之健康狀況，其平均值會與未參加檢查者相同(根據自評健康狀況之 5 分量表，未參加者平均值為 2.94 分，參加者為 2.93 分)。這些結果顯示，在控制年齡的影響之後，由臨床資料所產生的估計值不致有嚴重的偏差(Goldman et al., 2003)。

第三章：健康的臨床評估

本章的重點是與台灣的前幾大死因(行政院衛生署, 2002)之心血管疾病、腦血管疾病(中風)及糖尿病有關的常見臨床危險因子。透過健康檢查結果與所收集的生物指標資料, 瞭解台灣地區 54 歲以上中老年人人口健康危險因子的盛行狀況。本章第二部分則是比較美國與台灣的資料。最後, 討論 SEBAS 樣本與美國兩項類似研究其臨床評估結果之性別差異。

臨床危險因子盛行率

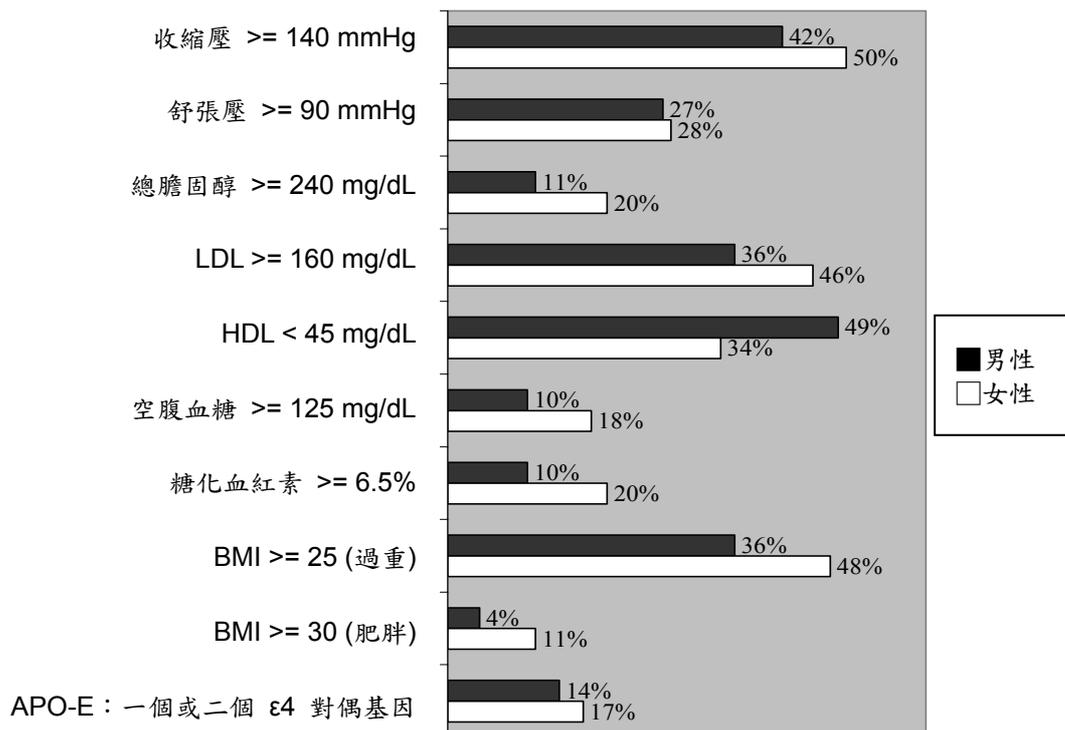
高血壓(定義為收縮壓在 140mmHg 以上, 或舒張壓在 90 mmHg 以上)是心臟病、中風與腎臟病的危險因子。SEBAS 的資料顯示, 台灣中老年人近半數收縮壓過高, 逾 1/4 舒張壓過高(圖 3-1)。在醫療場所內(特別是個案不熟悉的醫院與醫師), 可能因為有所謂的「白袍性高血壓」效應而使測得的血壓值偏高, 然而這些比例仍可能顯示出公共衛生的問題。

膽固醇過高, 特別是低密度脂蛋白(low density lipoprotein, 簡稱 LDL)膽固醇增加, 以及高密度脂蛋白(high density lipoprotein, 簡稱 HDL)膽固醇降低, 會增加心臟病與中風的危險。在台灣地區中老年人常中, 大約有一成的男性與兩成的女性, 有總膽固醇過高的情形(定義為 240 mg/dL 以上)。然而, 三分之一以上的男性與近半數的女性, 有 LDL(或稱為「壞的」膽固醇)過高的情形(定義為 160 mg/dL 以上)。半數左右的男性與三分之一左右的女性 HDL(或稱為「好的」膽固醇)過低(定義為小於 45 mg/dL)⁴。

空腹血糖與糖化血色素(glycosylated hemoglobin) 過高都與糖尿病有關, 而糖尿病本身就是心臟病、中風與記憶功能障礙的危險因子。空腹血糖異常(定義為 125 mg/dL 以上)可能代表糖尿病前期症狀。糖化血色素是測量血中葡萄糖結合在血色素上的量, 是長期(檢驗前 2-3 個月)血糖值的一項較好的指標。糖化血紅素值在 6.5%以上, 可能代表需要接受糖尿病治療(Davidson et al., 1999; Nordenson, 2001)。在台灣地區中老年人當中, 約各有一成的男性與兩成的女性, 有空腹血糖及糖化血色素過高的情形(圖 3-1)。

⁴ 男性通常使用較低的臨床臨界值 (< 35 mg/dL); 若使用這個定義, 只有 16%的男性有 HDL 過低情形。

圖 3-1 2000 年 SEBAS 臨床危險因子之盛行率，按性別區分



肥胖會增加高血壓、高膽固醇、心臟病、第二型糖尿病與其他慢性疾病的危險。身體質量指數(body mass index, 簡稱 BMI)是廣為使用的肥胖指數,計算方式是將體重(公斤)除以身高(公尺)的平方。在台灣地區中老年人當中,超過三分之一的男性與近半數女性,按標準定義為過重(BMI 為 25 以上),但只有 4%的男性與 11%的女性屬於肥胖(BMI 為 30 以上)。臨床危險因子(例如:血壓收縮壓、總膽固醇、葡萄糖耐受性、肥胖)的性別差異,並非單純因為樣本中女性的年齡分布較男性高所造成。

脂蛋白元 E(apolipoprotein E, 簡稱 APOE) 基因有三種對偶基因型式($\epsilon 2$, $\epsilon 3$, 與 $\epsilon 4$);每個人都帶有有二個對偶基因。文獻指出至少有一個 $\epsilon 4$ 對偶基因的人,罹患缺血性心臟病與阿茲海默症的風險較高;如果有二個 $\epsilon 4$ 對偶基因,其罹病風險甚至更高。資料顯示,台灣地區中老年人帶有 $\epsilon 4$ 對偶基因的比例低於五分之一(圖 3-1)。

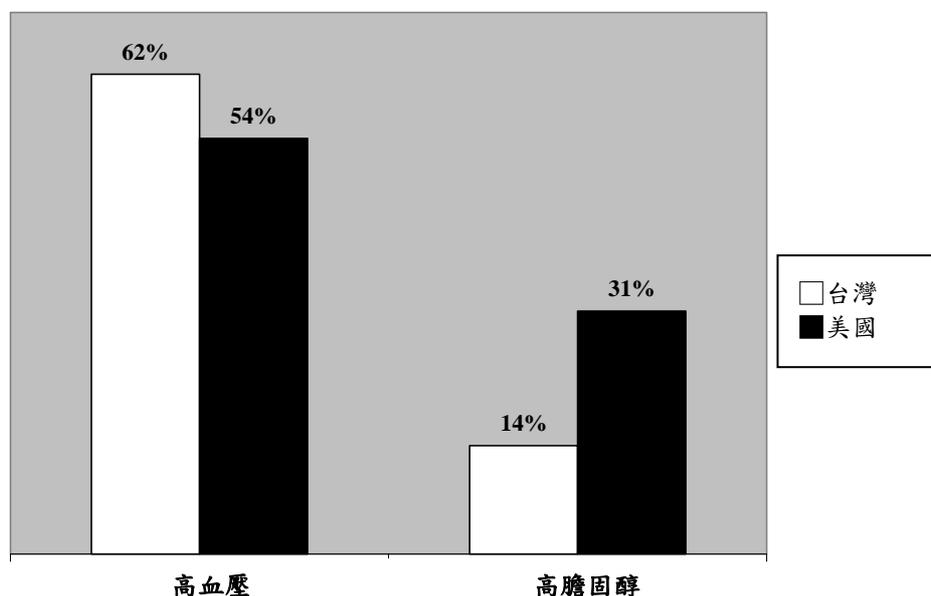
與美國比較

台灣人與美國人的平均餘命相近(1999 年:美國約 77 歲,台灣約 75 歲),且台灣老年人與美國老年人的首要死因都是一樣的慢性疾病,但是台灣與美國之間卻有著重要的社會與文化差異。在台灣,傳統上以及對許多老年人來說,在年老時比較喜歡與子孫(尤其是與長子)同住,而在美國,大部分的老年人則是獨居或僅與配偶同住。此外,敬老的觀念也深植於中華文化。在台灣地區,自古以來年長者通常較有權威,也較有決定權,且受到子女、其他親戚或陌生人較禮遇的對待。當台灣成為工業化社會,並逐漸受到西方價值與文化的影響之後,這些傳統價值觀已開始面臨壓力,因此,台灣與美國之比較,可以瞭解社會與文化因素對於健康危險因子的影響。

為進行分析比較,將血壓值高(收縮壓 > 140 或舒張壓 > 90 mmHg)或正服用抗高血壓藥物者定義為高血壓,高膽固醇定義為 > 240 mg/dL。美國的資料是來自於 1988-94 年之「第三次全國健康與營養調查」(National Health and Nutrition Examination Survey, NHANES III),為配合台灣加權樣本之分布,估計值經年齡與性別的標準化。另為與美國的資料做進一

步比較，只選取 SEBAS 調查 55 歲以上的中老年人樣本，並只使用第一次血壓測量值⁵。由圖 3-2 之數據顯示，台灣地區中老年人有高血壓的比例較美國為高(62%對 54%)⁶。另一方面，台灣中老年人有高膽固醇的比例，則遠低於美國中老年人(14%對 31%)。

圖 3-2 高血壓與高膽固醇，台灣與美國之比較



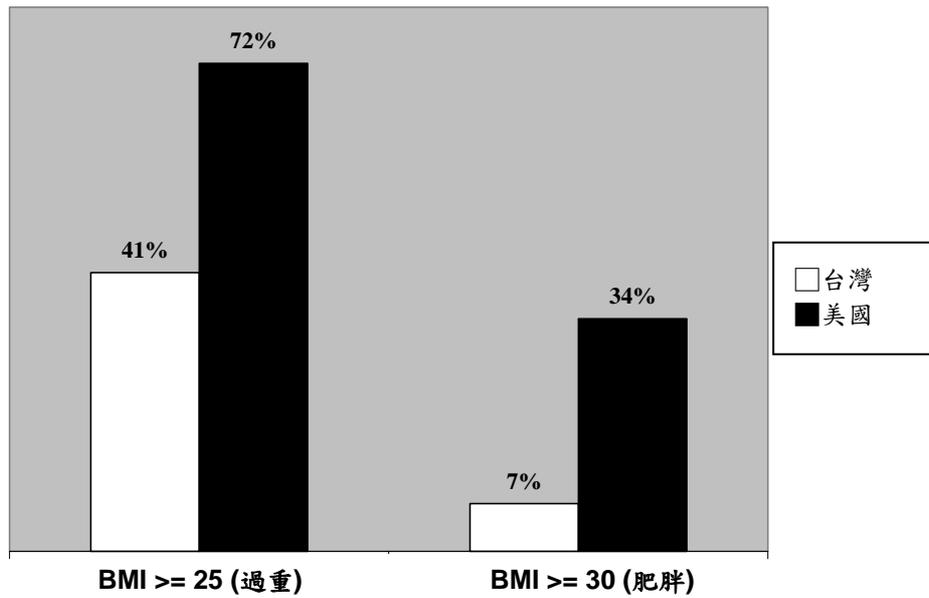
美國資料來源：國家衛生統計中心(2001)美國健康：2001 年都市與鄉村圖表集 (表 67、68，1988-94 年資料)，Hyattsville, MD: NCHS。
年齡與性別根據台灣 SEBAS 之分布標準化。

美國的 BMI 資料來自於 1999-2000 年的 NHANES，估計值同樣按台灣加權樣本分布(55 歲以上)進行年齡與性別標準化。相較之下，台灣中老年人過重或肥胖的比例，遠低於美國。台灣中老年人約四成過重，而美國則將近四分之三。另台灣中老年人只有 7%屬於肥胖，美國則超過三分之一(圖 3-3)。

⁵ NHANES III 所發表的統計表，只根據第一次血壓測量值，以與較早的 NHANES 資料作一致的比較 (當時只測量一次)。

⁶ 如果只使用第二次血壓測量值，台灣中老年人高血壓的比例降低為 57%。

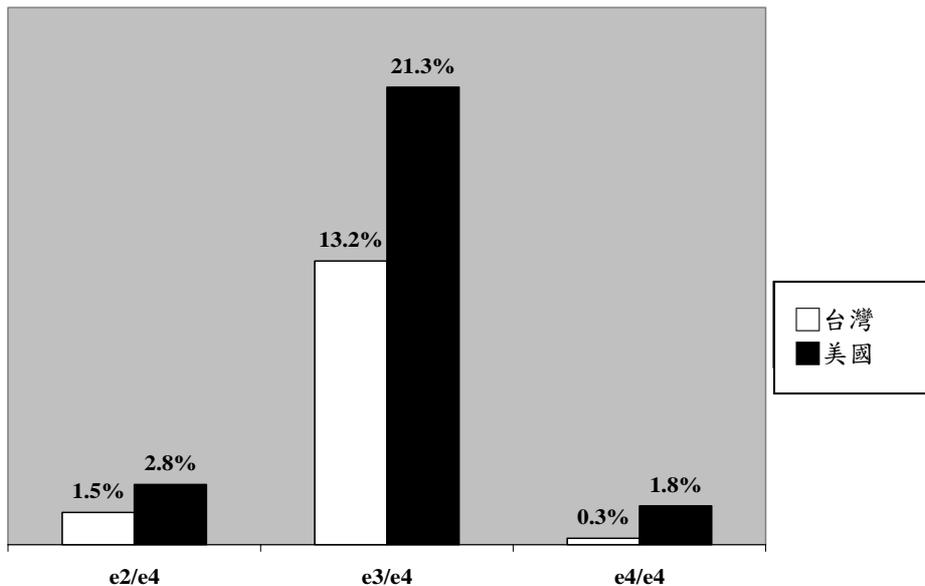
圖 3-3 台灣與美國 BMI 之比較



美國資料來源：國家衛生統計中心(2002)美國健康：2002 年美國人健康趨勢圖表集 (表 70, 1999-2000 年資料), Hyattsville, MD: NCHS。
 年齡與性別根據台灣 SEBAS 之分布標準化。

美國 APOE 基因型的資料，來自 Farrer 等人的研究(Farrer, 1997)，利用該研究對照組中白人的估計值作比較。從不同族群之大樣本資料估計結果，顯示華人有 APOE ε4 對偶基因的比例，相對較低(Gerdes et al., 1992)。圖 3-4 的資料也支持這項發現，美國人有 ε4 對偶基因的比率，遠高於台灣人(26%對 15%)。

圖 3-4 台灣與美國 APOE 基因型之比較



美國資料來源：Farrer et al. (1997). JAMA 278 (15): 1352。使用對照組中白人的資料。

臨床生物指標之性別差異

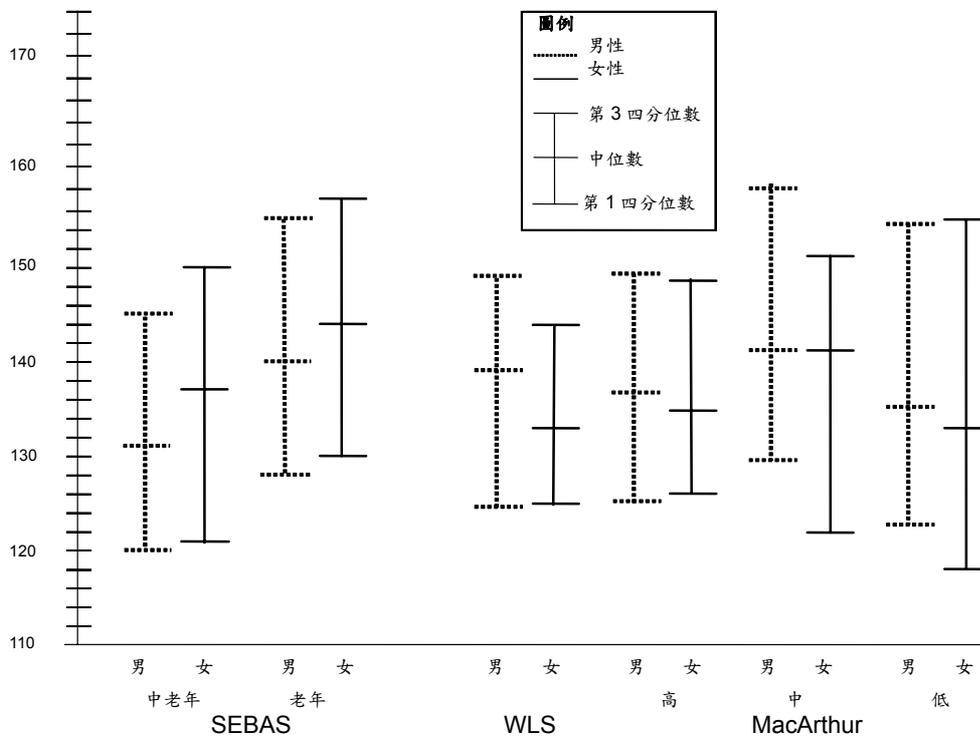
以往對西方人口與醫學研究證實，臨床生物指標在性別之間有重要的差異。西方國家的研究通常發現心血管疾病的危險因子通常以男性高於女性。若考慮台灣與西方社會結構的不同，男性與女性在這些生物指標可能不會有相同的差異性存在。

雖然台灣與美國的男性，因缺血性心臟病與糖尿病而死亡的比率都高於女性，但比起美國，台灣男性與女性之間的比率卻較為接近(Goldman et al., 2004; 行政院衛生署, 1996, 1997, 1998, 1999; 美國人口調查局, 2001; 美國國家衛生統計中心, 2003)。關於這些原因造成的死亡率，台灣女性(相對於男性)似乎並沒有較佔優勢。因此，問題在於台灣這些相關生物指標的性別差異，是否也相對小於美國。

為比較台灣 SEBAS 樣本與美國之間的性別差異，採用 1997 年的「威斯康辛長期研究」(Wisconsin Longitudinal Study, 簡稱 WLS)，與 1988-89 年「麥克阿瑟的成功老年人研究」(MacArthur Studies of Successful Aging)。WLS 共有 95 名 58-59 歲的個案(Sewell et al., 2002)，而麥克阿瑟研究的對象為 70-79 歲老人，再根據身體與認知功能分成高度功能者 731 人，中度功能者 54 人，以及 41 名低度功能者共 3 組(Berkman et al., 1993)。為與 WLS 和麥克阿瑟研究的年齡群相互對應，SEBAS 的估計值是將 54-70 歲與 71 歲以上分開計算。

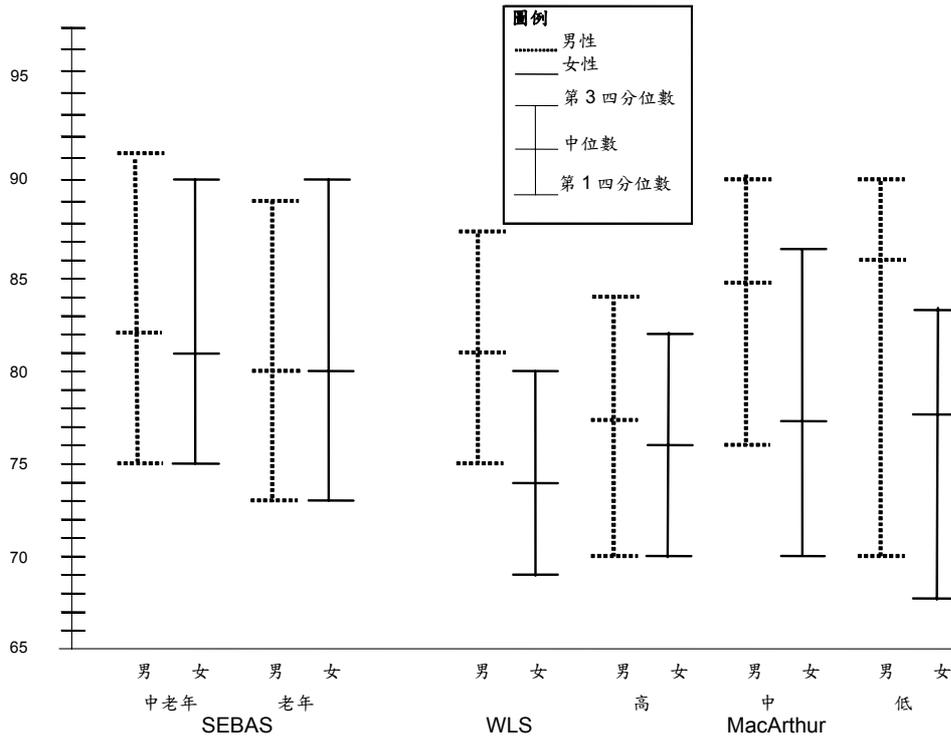
圖 3-5 至圖 3-10 為各種心血管疾病危險因子的性別差異(Goldman et al., 2004)。圖中標示出每一項生物指標於各樣本的第 1 四分位(第 25 個百分位數)、中位數(第 50 個百分位數)與第 3 四分位數(第 75 個百分位數)。圖 3-5 與圖 3-6 的資料顯示，台灣女性收縮壓與舒張壓較美國女性略高。事實上，台灣女性的收縮壓似乎比台灣男性略高，而美國的情形則正好相反。就舒張壓而言，美國男性同樣居於健康劣勢(男性舒張壓高於女性)，但台灣之性別差異極小。

圖 3-5 收縮壓之性別差異



資料來源：Goldman et al. (2004). (表 1(A)經許可後重製)

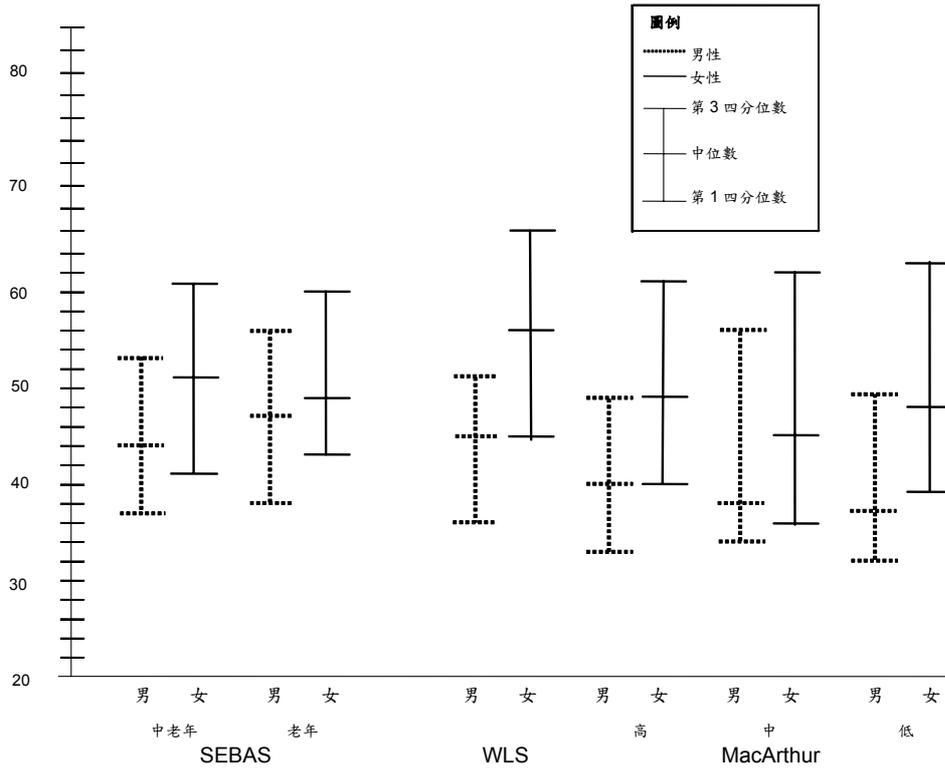
圖 3-6 舒張壓之性別差異



資料來源：Goldman et al. (2004). (表 1 (A) 經許可後重製)

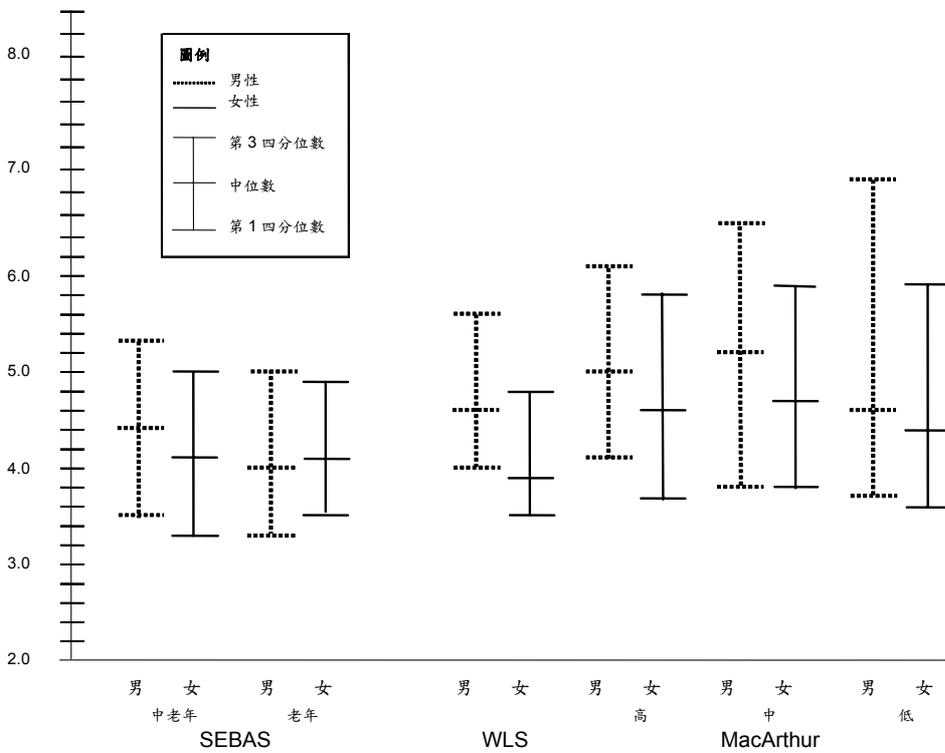
圖 3-7 與圖 3-8 顯示不同性別之高密度脂蛋白(HDL)與總膽固醇(total cholesterol, 簡稱 TC)對 HDL 比值之差異。HDL 不同於其他危險因子，是一項正面的指標，也就是其濃度越高，代表對健康越有利。相反的，TC 相對於 HDL 的值越高，則反應出健康上的風險。整體而言，這些資料都顯在兩國男性之健康狀況均居於劣勢(即男性相對於女性，HDL 較低，而 TC 對 HDL 的比值較高)，但台灣的性別差異較小。

圖 3-7 HDL 之性別差異



資料來源：Goldman et al. (2004). (表 1 (A) 經許可後重製)

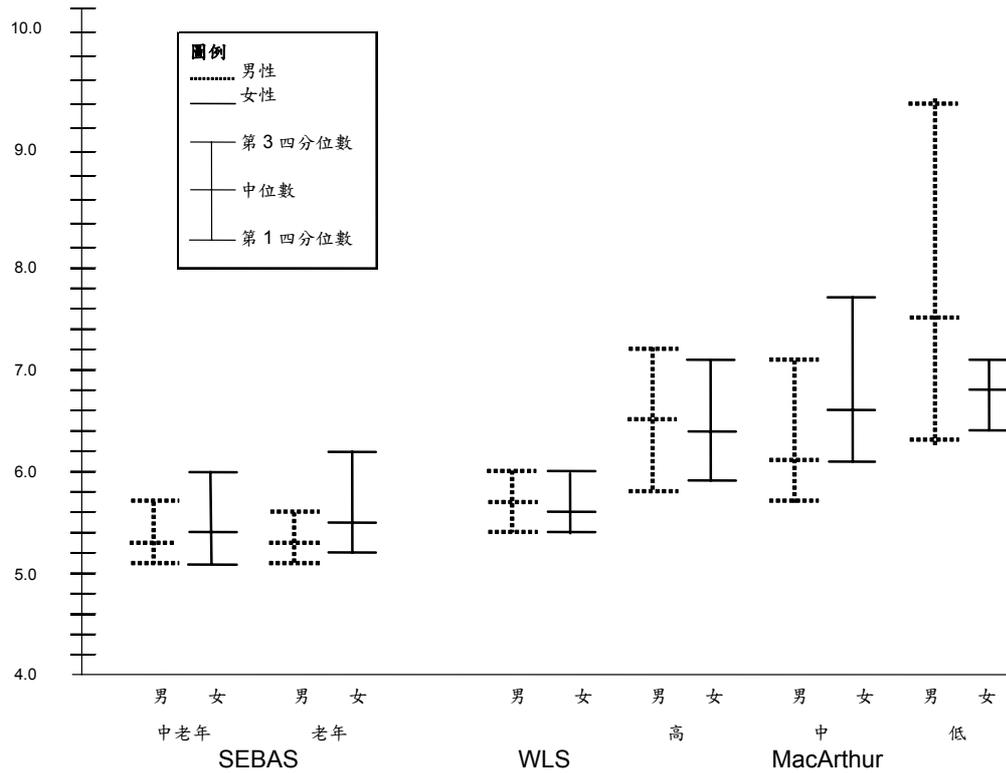
圖 3-8 TC/HDL 之性別差異



資料來源：Goldman et al. (2004). (表 1 (A) 經許可後重製)

美國男性與女性較台灣的男性與女性之糖化血色素高 (圖 3-9)，然而兩國並沒有任何共通性的性別差異模式存在。

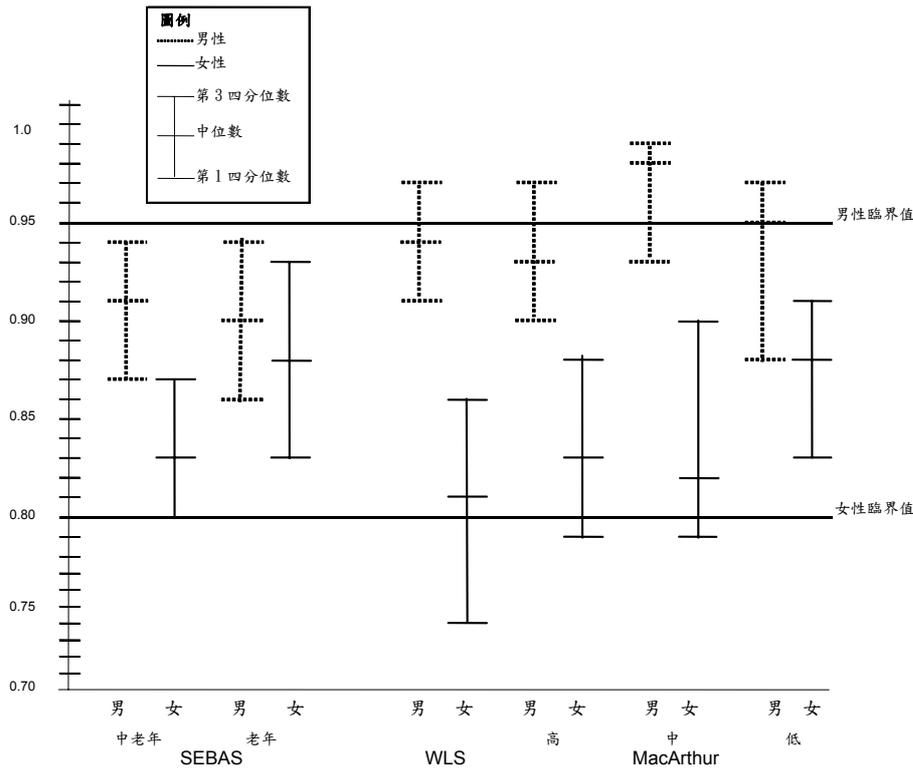
圖 3-9 糖化血色素之性別差異



資料來源：Goldman et al. (2004). (表 1 (A) 經許可後重製)

相較於台灣男性，美國男性腰臀比往往較高，但美國女性則比台灣女性略低(圖 3-10)。兩國中，男性的腰臀比都高於女性，但就用來定義心血管疾病危險性的臨界值而言，男性(> 0.95)通常高於女性(> 0.80)。以這些臨界值為基準，資料顯示兩國的女性之健康風險均高於男性，特別是台灣。在台灣男性當中，四分位距完全在臨界值 0.95 以下，但是台灣女性的四分位距則完全在臨界值 0.80 以上。相反的，有很大比例的美國男性與女性，四分位距均在臨界值之上。

圖 3-10 腰臀比之性別差異



資料來源：Goldman et al. (2004). (表 1 (A) 經許可後重製)

整體而言，在 6 項心血管疾病指標中，有 4 項美國男性居於劣勢，而台灣的性別差異較不一致且相對較小。只有 2 項指標(TC 對 HDL 比值、HDL)呈現一致之台灣男性健康劣勢，即使如此，男、女性之間的差異仍比美國小很多。此外，收縮壓、糖化血色素的資料，甚至腰臀比(根據風險的定義而異)，則顯示出台灣女性之健康劣勢。

摘要

經檢視台灣地區中老年人之臨床危險因子，有多項重要的發現。首先，台灣中老年人許多都具有心血管疾病的危險因子，尤其是高血壓、LDL 較高、HDL 較低，以及 BMI 過高等。其次，與美國的資料比較顯示，台灣人的健康風險概況比美國人為佳，但台灣的高血壓問題稍嚴重，尤其是女性。最後，台灣的性別差異較小，在美國通常以男性不利於健康的因素較多，但在台灣卻有許多例子顯示女性不利於健康的因素較多。

這些結果顯示在台灣需要注意可治療或可改變之危險因子，如此可能降低未來發生疾病與死亡的風險。此外，因為女性在許多健康指標方面的風險高於男性，這些結果顯示須對女性的健康格外關注，包括高血壓、膽固醇、血糖濃度與 BMI 等。

第四章：自評身體健康狀況

本章檢視台灣地區中老年人的身體健康狀況，利用 SEBAS 面訪問卷的資料描述個案自評之身體健康狀況；再利用理學檢查的資料，評估自評健康狀況的準確性；最後比較台灣與美國中老年人於特定疾病之盛行率。

慢性疾病

表 4-1 顯示台灣地區中老年人自述曾經罹患某些疾病的比例。而自述目前仍有該項疾病的比例則顯示於第二欄。

表 4-1 曾經罹患及目前患有某些疾病的百分比

疾病別	曾經罹患 (%)		目前患有 (%)	
	男性	女性	男性	女性
癌症或惡性腫瘤	1.8	3.2	0.4	1.5
中風 (腦溢血)	3.8	2.5	NA	NA
心臟病 (心悸不算)	13.5	17.5	11.4	14.6
糖尿病	11.7	18.9	10.8	17.8
肝、膽疾病	9.4	8.5	4.4	4.3
腎臟疾病 (包括結石)	10.7	7.8	5.1	3.6
支氣管炎、肺氣腫、肺炎、肺病、 氣喘或其他下呼吸道疾病	13.6	10.6	8.7	6.8
高血壓	31.3	33.4	28.6	30.1
關節炎或風濕症	10.2	23.1	8.2	20.0
脊椎骨骨刺	10.4	15.8	6.9	12.6
髖骨骨折	1.1	0.5	NA	NA
痛風	11.4	3.5	8.2	3.0
胃潰瘍或胃病	24.4	18.5	11.0	12.0
白內障	21.3	27.2	13.5	19.0

NA (Not applicable) : 不適用 (未詢問該問題)

以上這些疾病包含 2000 年台灣地區 10 大死因中的 8 種疾病(行政院衛生署, 2000)⁷。台灣老年人自評曾罹患癌症或惡性腫瘤的比例相對較少，目前罹患者甚至更少(少於 2%)(表 4-1)。然而，惡性腫瘤占了 2000 年台灣所有死亡人數的 1/4。癌症的盛行率較實際上低，是因為個案本身不知道(例如篩檢率低、醫師未告知)，或是許多診斷為癌症或惡性腫瘤的樣本個案，並未存活至老年因此而未訪問到。同樣地，不到 4% 的台灣老年人自評曾中風過。而腦血管疾病(其中最常見的為中風)佔 2000 年台灣人死亡人數的 11%，但根據另一項資料品質評估研究顯示，自述中風個案數可能較實際數字低，在台灣及美國皆然(Beckett et al., 2000)。

有部分台灣中老年人患有心臟病與糖尿病，14% 的男性與 18% 的女性自述曾罹患心臟病，12% 的男性與 19% 的女性自述曾患有糖尿病(表 4-1)。這兩項疾病佔 2000 年死亡人數的 16%，屬於典型的慢性疾病，一旦罹患，終生不會痊癒。因此，我們認為自述目前罹患某種慢性病的比例，應與自述曾經罹患該病的比例相近。事實上，自述目前罹患糖尿病的比例，

⁷ 其他兩項十大死因為：事故傷害 (第 4 名) 及自殺 (第 9 名)。

幾乎與過去罹病的比例相同，但是自述目前有心臟病的比例，比自述過去曾經患有心臟病的比例低 2 至 3%。

在其他主要的死亡原因中，4%的台灣中老年人患有肝臟或膽囊疾病，與自述目前罹患腎臟病的比例相近(男性 5%、女性 4%)。有 9%的男性與 7%的女性，自述目前有下列呼吸道疾病，例如支氣管炎、肺氣腫、肺炎、肺病或氣喘。

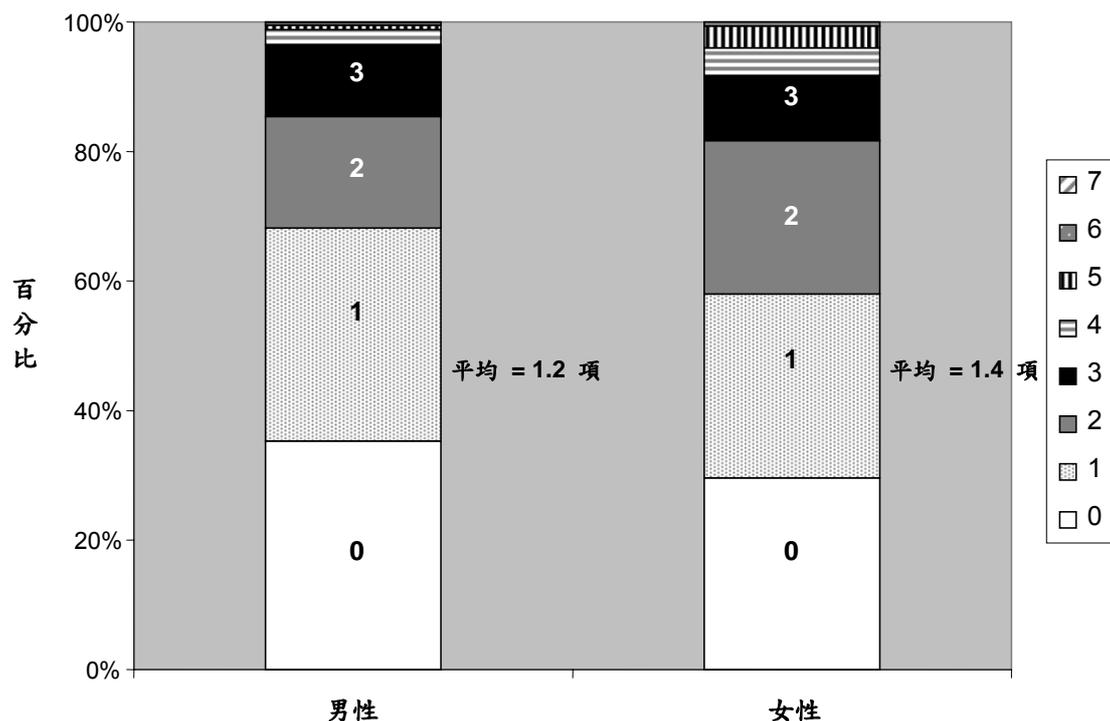
高血壓雖然不是台灣地區主要死因之一，但可能使其他慢性疾病病情加重，例如心臟病、中風與腎臟病。身體檢查的資料顯示(見第三章)，女性的高血壓盛行率似乎稍高於男性，三分之一的老年女性與 31%的男性自述有高血壓。

表 4-1 中顯示的其他疾病即使不會致命，也很可能導致明顯的身體不適，或嚴重限制身體活動功能。女性比男性更容易患有關節炎或風濕病(分別為 20%與 8%)、脊椎骨骨刺(13%與 7%)以及白內障(19% 與 14%)。另一方面，男性較容易有髖骨骨折(1.1% 與 0.5%) 或痛風(11% 與 4%)的問題。略高於一成的台灣中老年人，目前有胃潰瘍或其他胃部不適情形，但是近四分之一的男性與近五分之一的女性過去曾有這類的病症。

圖 4-1 顯示台灣地區中老年人目前罹患慢性疾病項目數之分布。在表 4-1 中所列出 12 種病症(中風與髖骨骨折除外)當中，有 65%的男性與 70%的女性目前至少患有其中一種病症。三分之一的男性與 28%的女性只有一項慢性疾病，但 15%的男性與 18%的女性有 3 種以上的疾病。平均來說，男性有 1.2 種病症，女性則有 1.4 種⁸。

⁸ 女性的發病率較高，似乎不是因年齡差異所引起。此樣本中男性與女性的年齡分布非常類似。此外，簡單迴歸模式顯示即使控制年齡，女性的健康情形仍比男性差。

圖 4-1 目前罹患之慢性疾病數目

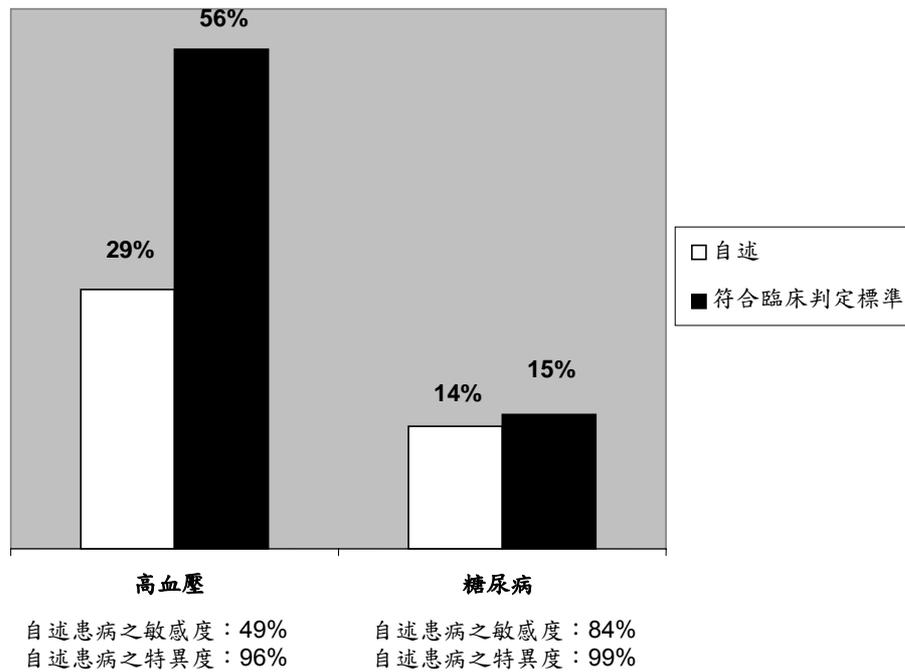


調查資料與臨床紀錄不同，調查資料的優點是容易從大型且具母體代表性的樣本中取得，成本也不高。不過調查資料也有潛在的缺點，自述資料的正確性有賴於個案對於相關資訊的知識、回憶能力與自述之意願。因此，自述方式有可能低估不同健康問題的盛行率。

為了評估自述資料的正確性，進一步比較依生物醫學標準判定與個案自述之高血壓與糖尿病盛行率。有關 SEBAS 理學檢查資料，是將「臨床判定」高血壓定義為收縮壓 140 mmHg (含) 以上，或舒張壓 90 mmHg (含) 以上，或服用抗高血壓藥物 (美國國家衛生研究院，1997)。若個案的糖化血色素 (HbA1c) 在 7.0% 以上，則視為罹患糖尿病 (這並不是典型的篩檢標準，通常糖化血色素在 6.5-7.0% 的範圍代表有糖尿病)。

圖 4-2 顯示自述患有高血壓與糖尿病個案的比例，與符合這兩種疾病臨床標準的比例。這些數值顯示，自述情形通常大幅低估高血壓的盛行率，但對於糖尿病盛行率的推估則有相當地準確性 (Goldman et al., 2002)。而針對敏感度 (也就是符合臨床判定標準者其自述患有該項疾病之比例) 與特異度 (也就是依臨床判定標準判定為未患病者其自述未患病之比例) 的評估，則可以解釋在高血壓部分為何會有如此大的差異。在符合高血壓臨床標準評定的個案中，只有 49% 自述有高血壓。然而，特異度非常高，只有 4% 未達到高血壓標準臨床標準評定者自述有高血壓 (特異性 96%)。糖尿病部分，敏感度相當高 (84%)，特異度則更高 (99%)。

圖 4-2 自述與臨床判定的高血壓與糖尿病百分比



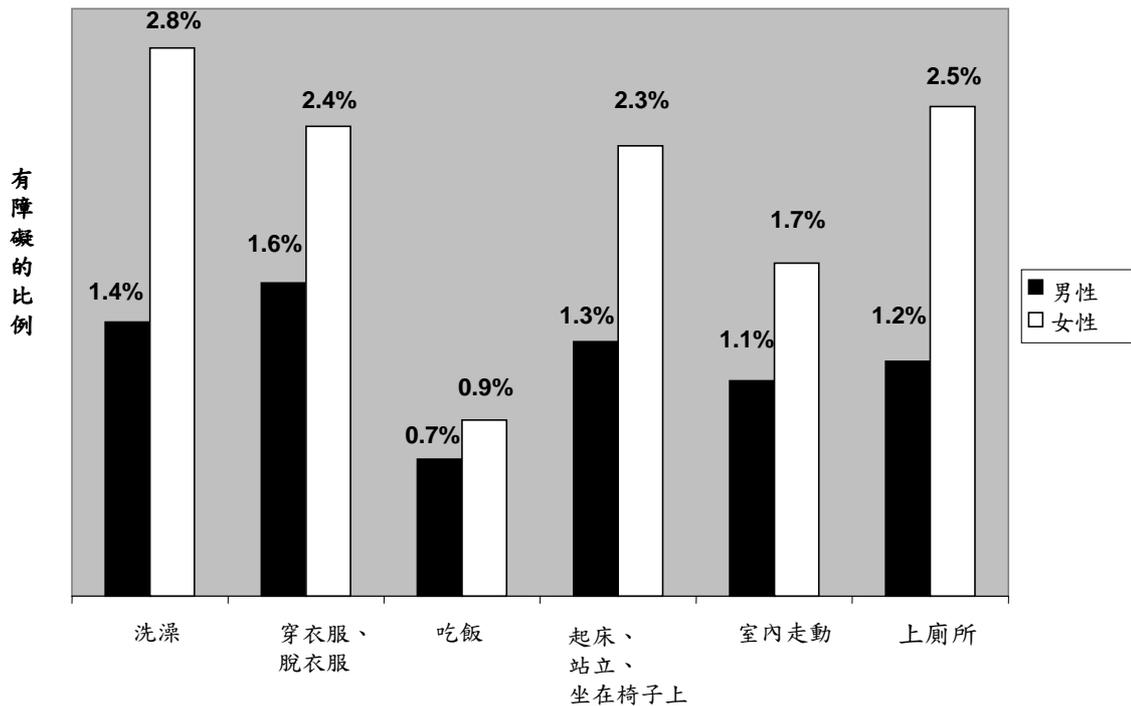
以多變項模型分析預測自述罹病情形之準確性，顯示受過正式教育與最近作過健康檢查者，在高血壓方面之自述患病率較準確（本資料未列，細節請見 Goldman et al., 2003）。高血壓患者其年齡越高，自述患病率越準確，但對於正常血壓者，年齡越高則自述患病率越不準確。換言之，隨個案年紀愈大，不論本身是否真的有高血壓，會比年輕個案更可能自述患有高血壓。

身體功能

身體功能通常以日常生活活動 (Activities of Daily Living, 簡稱 ADL) 功能量表與工具性日常生活活動 (Instrumental Activities of Daily Living, 簡稱 IADL) 功能量表作為評量指標。ADL 是指個人的照護需求，例如洗澡、吃飯與穿衣等。IADL 是指維持生活環境所必須的活動，例如做家事、購物與處理金錢等。ADL 與 IADL 出現困難，代表「個人在社會文化與物理性環境中，依社會定義之角色及任務無法執行或受到限制」(Nagi, 1991:315)。

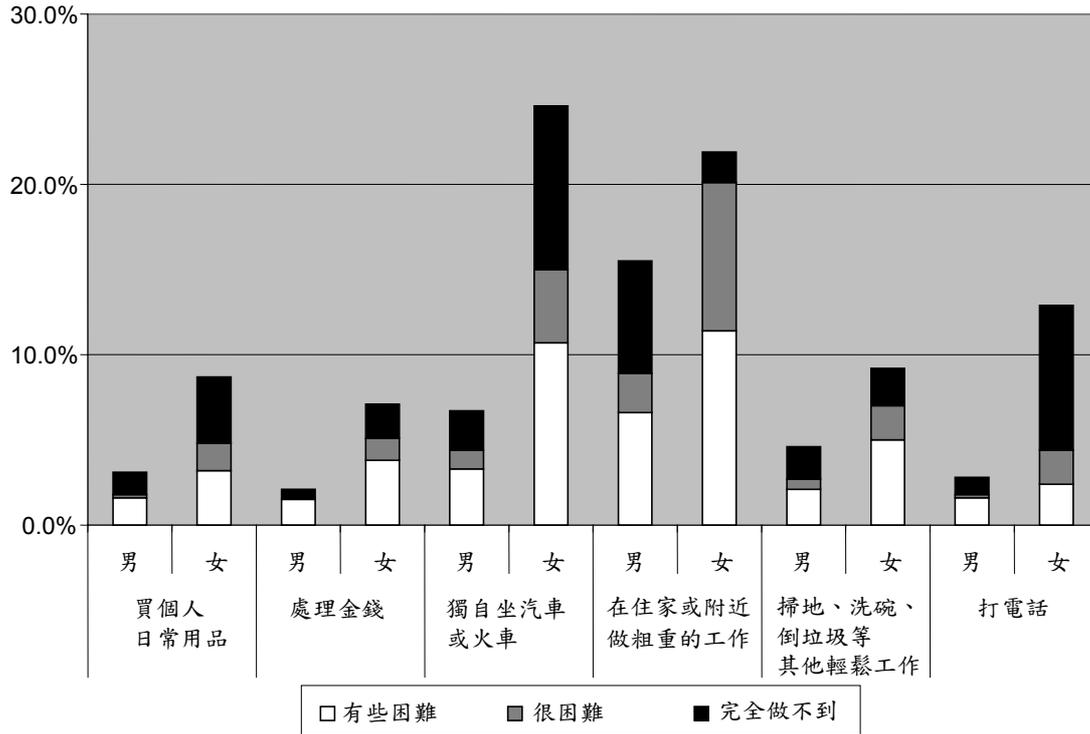
圖 4-3 顯示台灣地區中老年人 ADL 有障礙的比例。以最常見的是洗澡或是穿、脫衣服困難而言，有其中任一 ADL 障礙的男性不到 2%，女性不到 3%。整體而言，女性較可能有 ADL 功能障礙，其有至少一項 ADL 障礙的比例，為男性的二倍 (6% 與 3%，資料未顯示)。

圖 4-3 日常生活活動 (ADL) 障礙比例



IADL 障礙一般較為常見，同樣的也以女性有此類障礙之比例較高 (圖 4-4)。最常見的 IADL 障礙，包括在住家或附近做粗重的工作、打電話，在女性則為獨自坐汽車或火車。22% 的女性與 16% 的男性，在住家或附近做粗重的工作 (例如清水溝或清洗窗戶) 時有些困難，但是只有 2% 的女性與 7% 的男性表示完全做不到。然而，8% 的女性表示無法自行打電話，10% 無法獨自坐汽車或火車，無法完成這些活動的比例，在男性分別為 1% 與 2%。整體而言，台灣地區中老年有 41% 的女性與 17% 的男性，在進行一項或多項 IADL 時至少會有某些程度的障礙 (資料未顯示)。男性平均有 0.34 項 IADL 障礙，女性則有 0.94 項。

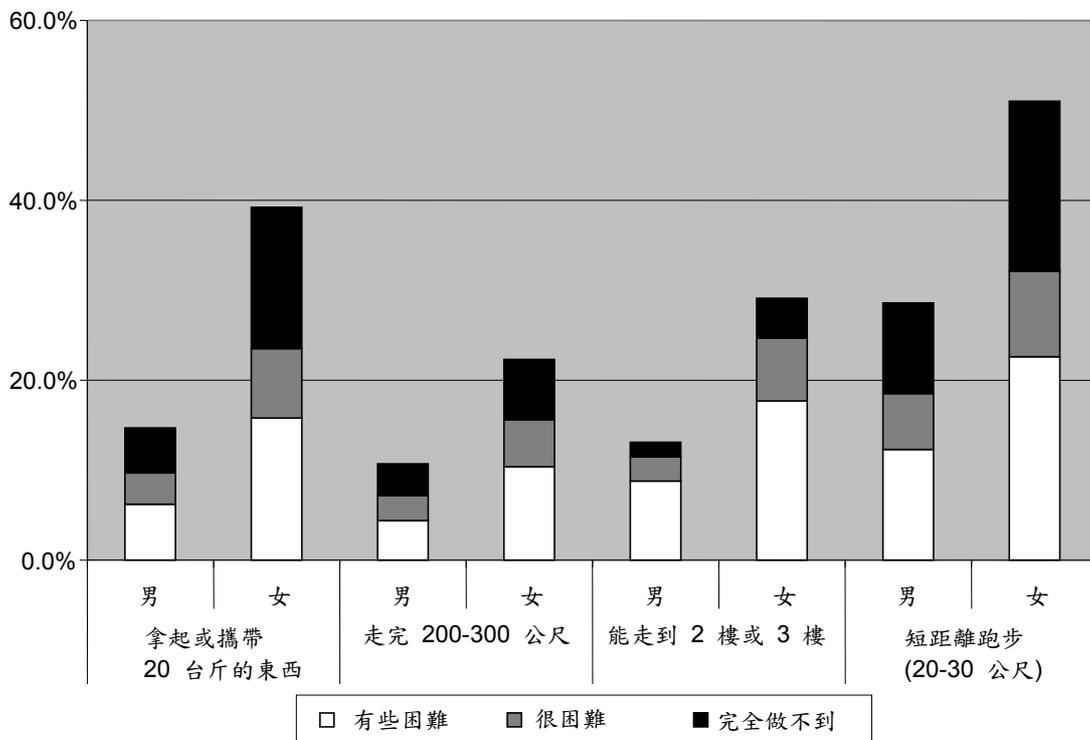
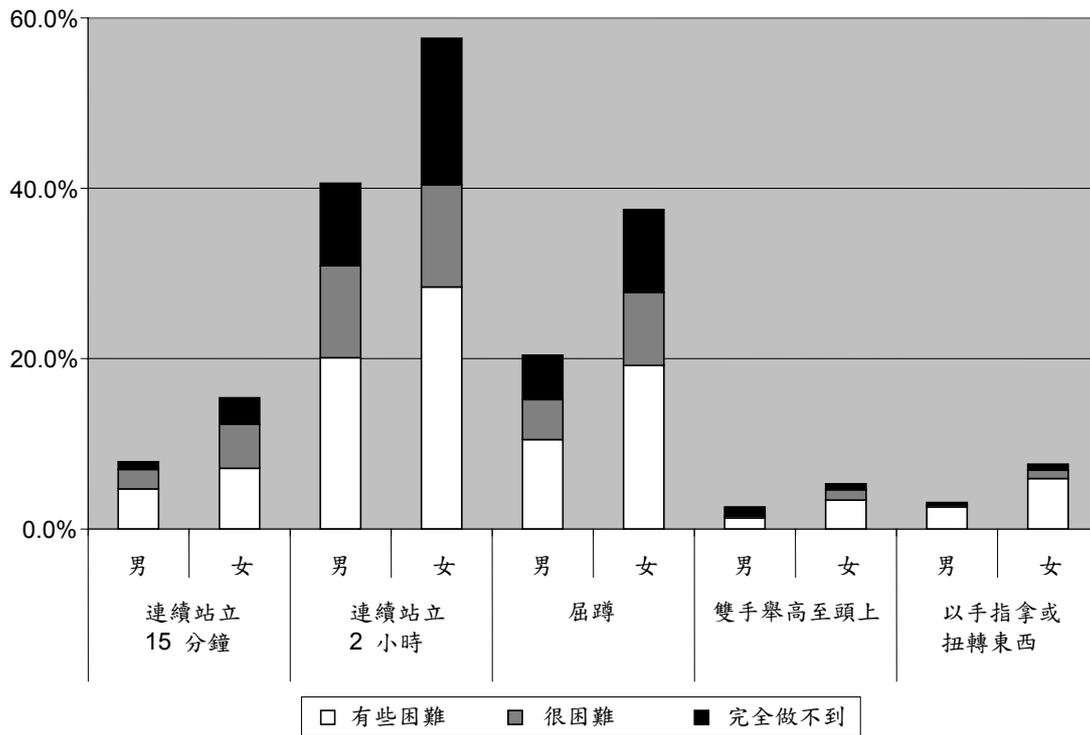
圖 4-4 工具性日常生活活動 (IADL)，按困難程度區分



其他一般功能性活動，例如行走一段距離或爬樓梯等，則為與社會定義角色無關的功能性能力 (Verbrugge & Jette, 1994)。IADLs 的障礙，可能會受角色期待與文化因素之干擾，因此各項身體活動的能力，較能做跨文化間之比較 (Freedman & Martin, 1998; Zimmer & Lin, 2000; Zimmer et al., 1998)。

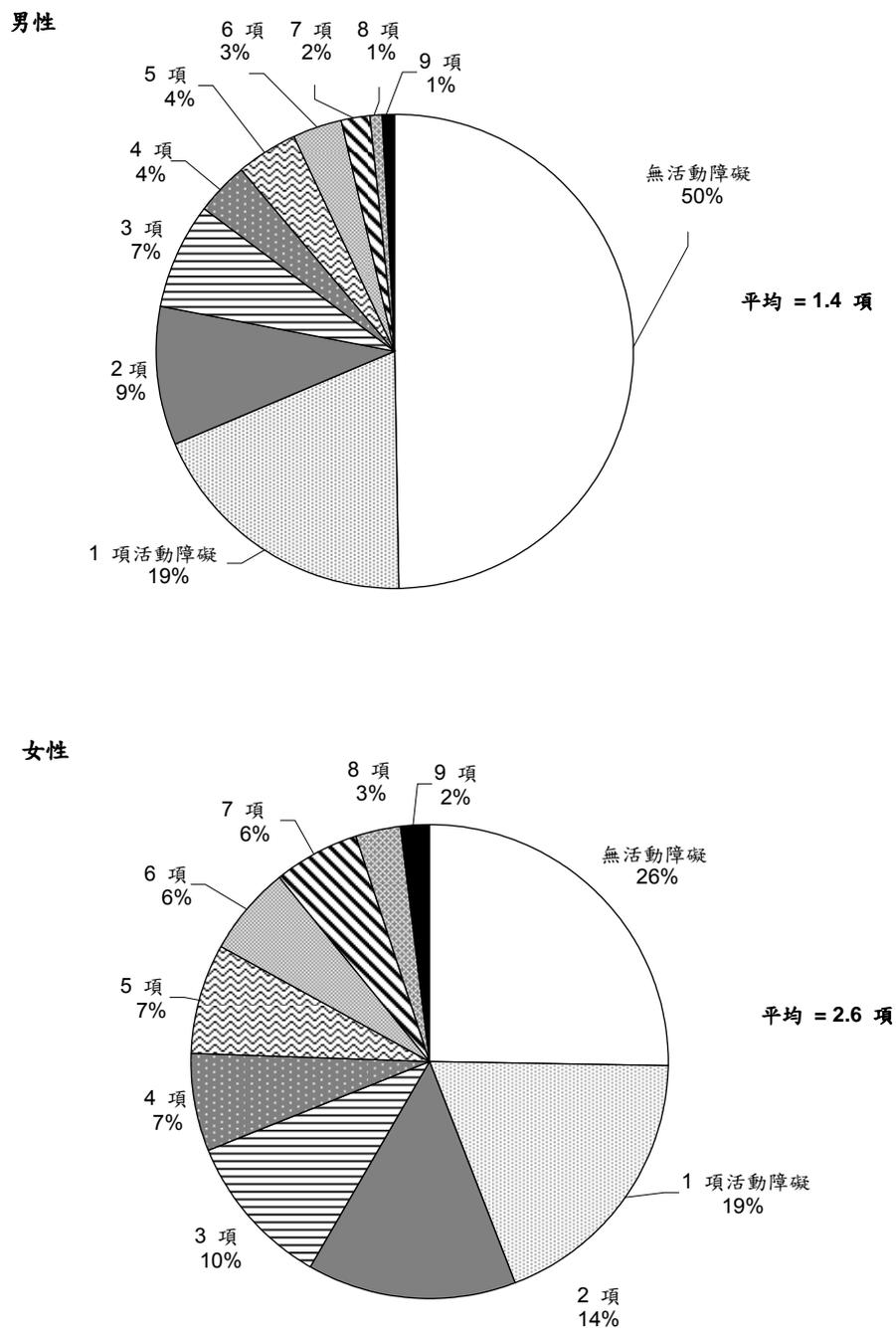
圖 4-5 顯示不同身體活動項目之受限程度。最常見的行動障礙為無法長時間站立與短距離跑步，但是也有高比例的台灣中老年人，尤其是女性，在雙手高舉至頭上、屈蹲、爬樓梯、走完 200-300 公尺方面也有困難。在中老年婦女中，58%表示連續站立 2 小時會有困難，51%表示短距離跑 20-30 公尺會有困難，而完全做不到的比例各為 17%與 19%。這些項目在男性有 41%與 29%表示會有困難，而完全做不到的比例各佔 10%。

圖 4-5 身體活動，按困難程度區分



如圖 4-6 所示，四分之三的中老年女性與半數的中老年男性，有至少一項身體活動困難。近三分之一的女性與 15% 的男性有 4 項以上的限制。男性平均有 1.4 項身體活動障礙，女性平均有 2.6 項。

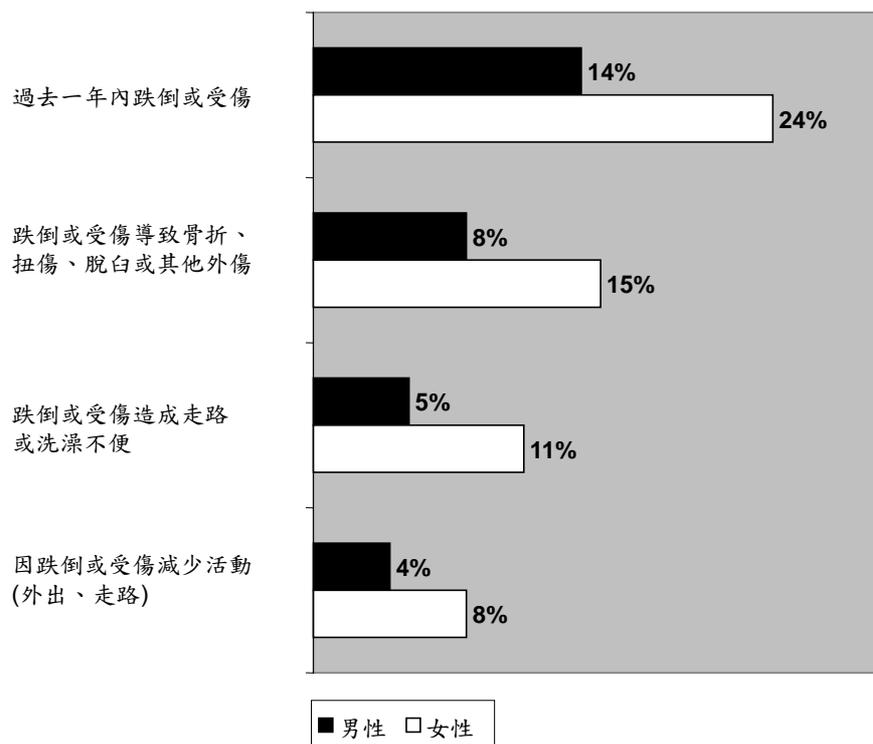
圖 4-6 身體活動困難(任何困難度)項目數



過去一年內跌倒或事故傷害

跌倒及事故傷害對老年人的影響，比年輕人嚴重很多。圖 4-7 顯示調查前一年台灣地區中老年人跌倒或受傷的比例。女性比男性更容易跌倒或受傷 (24% 與 14%)，而且更容易因而造成不良之後果。例如，男性只有 8% 會因跌倒或受傷造成骨折、扭傷、脫臼或其他外傷，但女性則有 15%。小部份的個案在跌倒或受傷後，會造成走路或洗澡之不方便，或因此而減少活動，女性出現這些問題的比例是男性的兩倍。

圖 4-7 過去一年內跌倒或事故傷害



與美國比較

台灣與美國的十大死因有 8 項相同 (行政院衛生署, 2000; Anderson, 2002), 因此比較這些慢性疾病在兩國的盛行率, 可獲得有用的資訊。

美國的資料來自 1997 年的「國民健康訪問調查」(National Health Interview Survey, 簡稱 NHIS)。為進行比較, 只採用 SEBAS 65 歲以上樣本資料, 以配合 NHIS 的年齡分組, 並將美國的資料加以標準化, 以符合 SEBAS 65 歲以上加權樣本的性別分布。

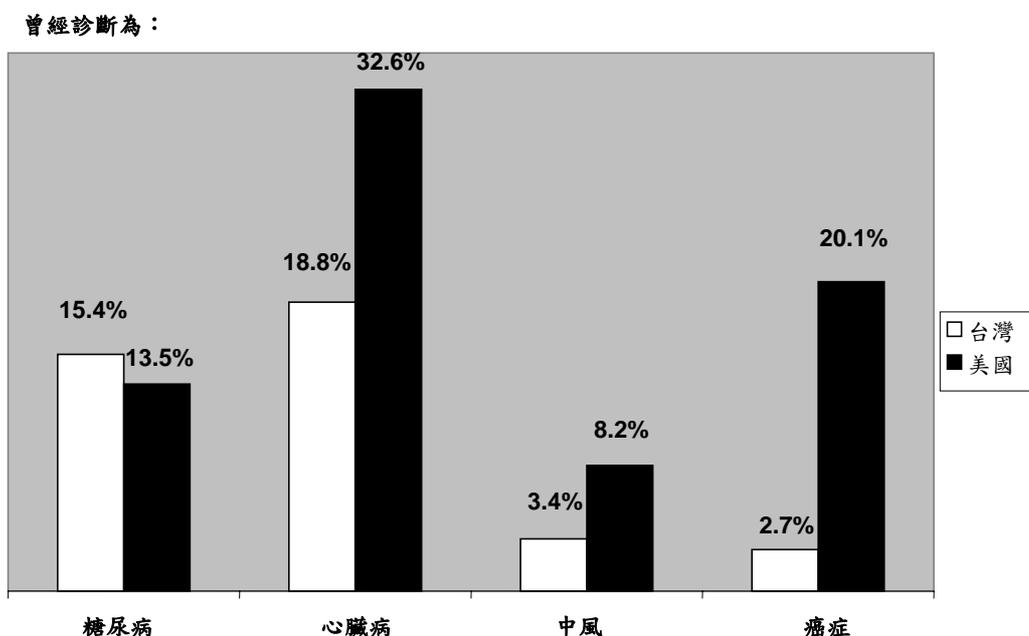
如圖 4-8 所示, 台灣地區 65 歲以上個案的糖尿病盛行率, 略高於美國。然而, 兩國資料有很重要的性別差異, 台灣女性的糖尿病盛行率遠高於男性 (分別是 25% 與 9%), 而美國男、女性的盛行率則相近 (13.3% 與 13.7%)⁹。

另一方面, 美國老年人患有心臟病、中風與癌症的比例, 遠高於台灣老年人。相較之下, 美國老年人心臟病的盛行率幾乎是台灣的 2 倍 (美國 33%、台灣 19%), 曾發生中風的比

⁹ NHIS 特別排除妊娠性糖尿病。然而, 台灣女性糖尿病盛行率較高, 似乎不是單純因妊娠糖尿病所致。如果有這種情形存在, 目前糖尿病的比率會遠低於曾患有糖尿病的比率。事實上, 二者的數據非常類似: 分別是 24% 與 25%。

例也在台灣的 2 倍以上 (美國 8%, 台灣 3%), 診斷出癌症的比例則幾乎高達 7 倍 (美國 20% 與台灣 3%)。癌症盛行率的極大差異, 有部分是因為自述上的偏差, 例如台灣人可能因為較少被診斷出癌症, 沒有被告知病情, 或是在訪談中不願提及, 而較少自述患有癌症。

圖 4-8 65 歲以上老年人之慢性疾病盛行率, 台灣與美國比較



美國資料來源: Blackwell DL 等人 (2002), 美國成人健康統計摘要: 國民健康訪問調查, 1997 (表 2, 6 及 8)。生命與衛生統計 10 (205): 25。美國國家衛生統計中心。性別根據台灣 SEBAS 之分布 (加權) 標準化。

摘要

2000 年台灣三大死因為癌症 (惡性腫瘤)、腦血管疾病 (例如中風) 與心臟病 (行政院衛生署, 2000)。在 SEBAS 調查中, 台灣中老年人自述曾罹患癌症或中風的比例很小, 但是心臟病的盛行率卻很高。糖尿病是台灣的第五大死因, 在 SEBAS 樣本的盛行率也相當高。值得注意的是, 上述四種疾病在女性的盛行率, 都高於男性。此外, 較多女性自述有高血壓的問題, 而高血壓通常是其他更嚴重疾病的前兆, 這一點與 SEBAS 健康檢查的資料相同 (見第三章)。另一方面, 男性自述有肝病、腎病及呼吸道疾病的比例較高, 而這些都是十大死因中的疾病。女性較容易出現不會致命, 但會限制行動、增加疼痛或造成不適的疾病, 例如關節炎、脊椎骨骨刺及白內障等。而男性比女性較易罹患痛風。

整體而言, 大約三分之二的台灣地區中老年人自述目前至少患有 12 項慢性疾病當中的一種, 且 15% 男性與 18% 女性罹患慢性病在 3 種以上。根據個案自述慢性疾病與臨床評估結果相互比較之效度分析結果, 個案自述會低估實際疾病之盛行率, 然而不同疾病被低估的程度則不盡相同。

在身體功能方面, 僅少數台灣中老年人在進行吃飯、洗澡等日常生活事項 (日常生活活動; 簡稱 ADL) 會有困難, 女性至少有一項 ADL 障礙的比例是男性的兩倍 (分別為 6% 與 3%)。而獨立生活方面的障礙 (工具性日常生活活動功能; IADL) 則較常見, 女性有 IADL 障礙的比例同樣高於男性 (至少有一項 IADL 障礙的比例, 女性為 41%、男性 17%)。相當高比例的台

灣中老年人會有某些行動上的限制。四分之三的女性以及半數男性在站立或短距離跑步等身體活動上有困難。女性也比男性更容易跌倒或受傷，並因此而造成不良的後果。

與美國資料比較顯示，台灣地區中老年人之惡性腫瘤、中風與心臟病盛行率遠低於美國，但糖尿病盛行率略高，且只有女性的盛行率較高，台灣女性的糖尿病盛行率幾乎是美國女性的 2 倍，台灣男性之糖尿病盛行率則略低於美國男性。

整體而言，台灣中老年女性在身體健康狀況的許多項目上，包括多種慢性病的盛行率與身體功能情形，似乎都比男性差。

第五章：認知與心理安適狀態

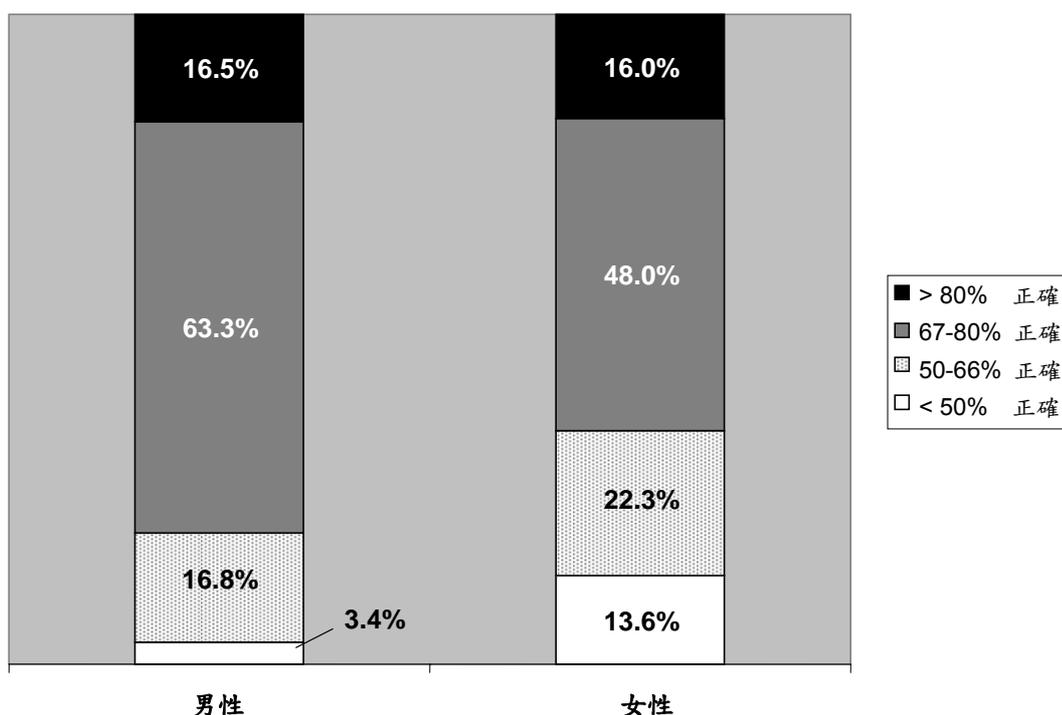
本章探討台灣中老年人口認知與心理安適狀態的各項指標。1948 年世界衛生組織 (World Health Organization, WHO) 將健康定義為「身體、心理與社會上的完全安適狀態，而不僅只是免於疾病或虛弱」(WHO, 1948; WHO, 2001)。本章主要檢視身體健康以外的其他安適狀態，而此兩不同面向間經常相互關聯。此部份資料來自 SEBAS 研究之問卷訪問結果，並以個案自述之狀況為基準。

認知功能

認知功能的測量是依據能否正確回答有關記憶力、基本定向(basic orientation)能力與簡單減法運算等問題的總分來評估 (滿分為 24)。基本定向能力的問題包括：詢問個案的地址、日期、星期幾、個案的年齡、個案母親娘家的姓，以及現任總統與上一任總統是誰。記憶力的評估項目，包括請個案重複 (順序不拘) 由訪員唸出的 10 項簡單名詞 (例如火車、狗、船)，以及以顛倒順序複誦訪員所唸的 5 個數字 (如 4、2、9、8、1)。

圖 5-1 顯示認知功能之性別差異。約有 16% 的男女個案具有高度認知功能 (即回答問題正確率高於 80%)。若將認知問題半數以上無法正確回答者稱為認知功能「不良」，則此比例在男性只有 3%，但是女性認知不良的比例則高出許多 (14%)。能答對三分之二以上認知問題者之比例，男性也遠高於女性 (分別為 80% 與 64%)。有研究指出認知功能與教育程度有關 (Hill et al., 1993; Zhang et al., 1990)，在本項研究中，控制教育程度可大幅降低因性別所造成的認知功能差異 (資料未列出)。

圖 5-1 認知功能分布，按性別區分



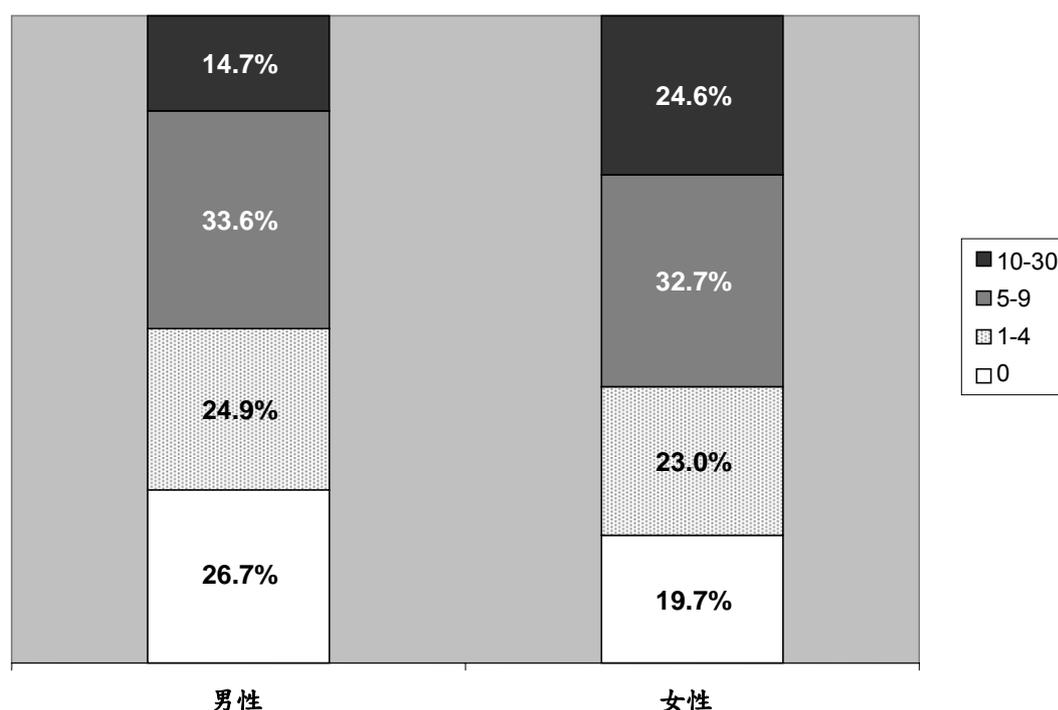
憂鬱

憂鬱是根據流行病學研究中心抑鬱量表 (Center for Epidemiologic Studies Depression Scale, 簡稱 CES-D) 中的 10 個項目 (原有 20 項) 進行評估，詢問個案在過去一週中，各類不同狀況或感覺出現之頻率，包括不太想吃東西，胃口很差、覺得做每一件事情都很吃力、睡

不好覺 (睡不入眠)等。回答類別則包括從未、很少 (只有 1 天)、有時候會 (2-3 天)、經常或一直 (4 天以上)。將這些類別分別轉換為 0-3 分,分數越高表示憂鬱程度越嚴重,而 10 個項目的得分總和,範圍介於 0 分至 30 分。再將憂鬱分數的依得分高低分為:0 分 (無憂鬱症狀)、1-4 分、5-9 分,以及 10 分以上,其中 10 分以上表示有相當嚴重的憂鬱症狀。例如,如果個案 10 個項目都是「很少」(每週 1 天),或有 3 項為「有時候會」、1 項為「很少」,同樣都會得到 10 分。

圖 5-2 顯示不同性別的 CES-D 得分分布。四分之一女性中老年人的憂鬱分數在 10 分以上,男性中老年人僅 15%。逾半數的男性與 43%的女性依自述並沒有憂鬱症狀或憂鬱程度相當低。

圖 5-2 憂鬱分數分布,按性別區分

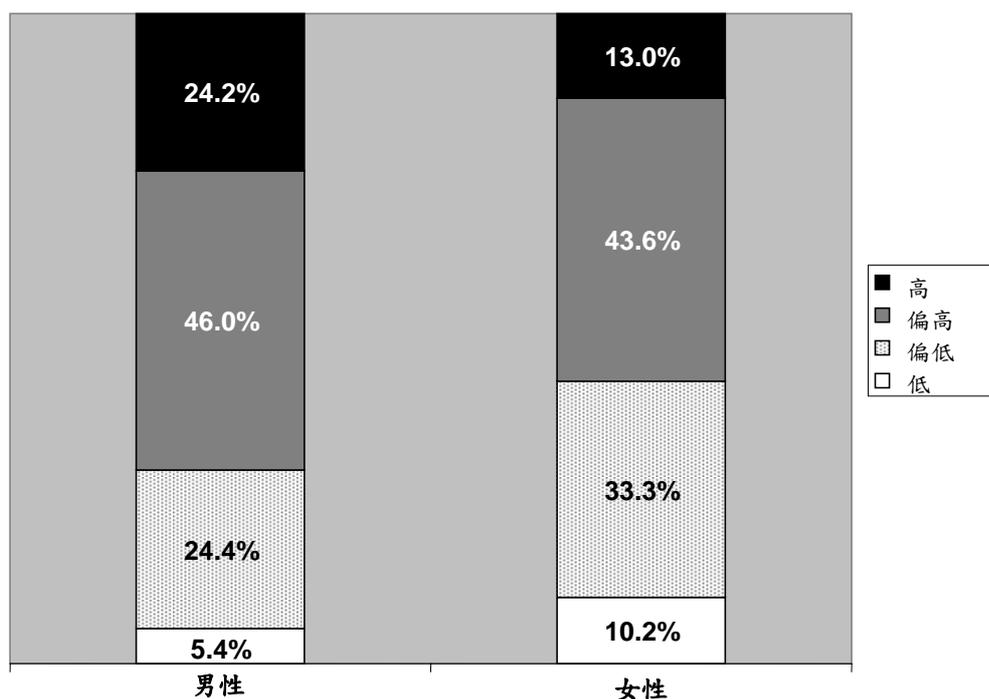


個人控制

個人控制力(Personal Mastery)是指一個人控制自己生活的能力,評估方式是根據 7 項問題,例如:「對於發生在你身上的事情,你很難去控制」,「有時候你覺得在生活中是任人擺佈的」。回答類別分成「非常同意」、「同意」、「不同意」,以及「非常不同意」四類。其中有 2 個問題代表較強的控制力 (例如「未來有什麼事要發生在你身上,大部分是靠你自己決定」),其得分以反向記錄,故同意的程度越高,表示個人控制力越低。所有項目分數經加總平均後分成「個人控制力低」(也就是平均來說都同意這些說法)、「個人控制力稍低」(低於同意與不同意的中間值)、「個人控制力稍高」(高於同意與不同意的中間值)與「個人控制力高」(平均來說不同意這些說法)等四個類別。

圖 5-3 顯示不同性別之個人控制力程度分布情形。男性有高度個人控制力之比例遠較女性為高(24% 與 13%),而男性個人控制力低的比例僅為女性的一半 (5% 與 10%)。

圖 5-3 個人控制力分布，按性別區分



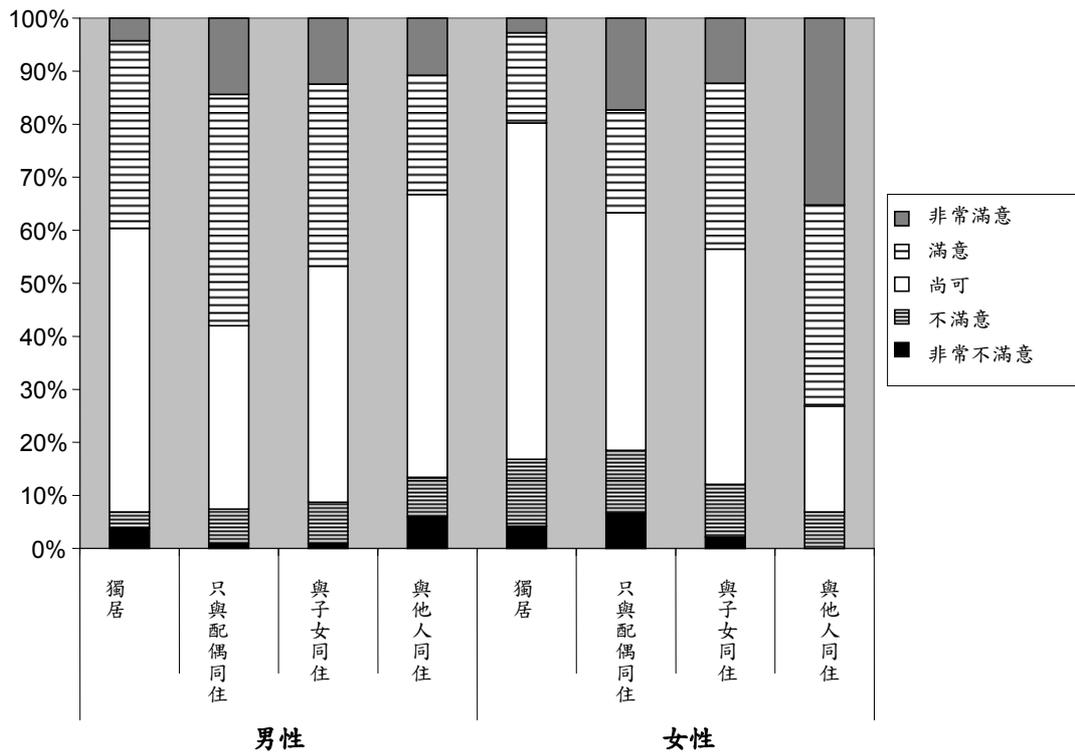
居住狀況滿意度

有關對居住狀況滿意度的指標，係單純詢問個案對目前居住狀況的滿意度。將近半數的中老年男性與女性都滿意目前的居住狀況，只有 9% 的男性與 13% 的女性表示不滿意（資料未列出）。

如圖 5-4 所示，居住狀況的滿意度與個案的居住安排有關。大約三分之二的個案至少與 1 名子女同住，近五分之一只與配偶同住（資料未列出）。就女性中老年而言，與子女或其他人同住者，比起獨居或只與配偶同住者，有更高比例對居住狀況感到滿意¹⁰。相反的，僅與配偶同住的男性中老年人，比起獨居、與子女或其他人同住者，更容易感到滿意（58%）。

¹⁰ 已婚女性與子女同住者，比起只與配偶同住者，更滿意（或非常滿意）她們的居住狀況（43% 與 37%）。而已婚男性結果則相反，與配偶同住者，對居住狀況的滿意程度高於與子女同住者（58% 與 46%）。

圖 5-4 對居住狀況之滿意程度，按不同居住安排區分



摘要

SEBAS 的資料顯示，相當的台灣中老年人認知功能較低，心理安適狀態不佳，其中女性的狀況比男性更不理想。

雖然認知功能不良 (<50% 正確) 的比例相當低，但是有五分之一的男性與略高於三分之一的女性無法正確回答至少三分之二的記憶性、知識性與計算性問題。雖然女性認知功能不良的比例高於男性，但在高度認知功能方面(正確率高於 80%)，男女之間沒有明顯差異。

很多台灣中老年人有憂鬱症狀，尤其是女性 (25%，男性為 15%)。比起男性，女性也比較不容易感到有較高的個人控制力或自我生活控制力，其覺得控制力低的比例為男性的 2 倍。一般來說，大部分的台灣中老年人都滿意或至少滿足於目前的居住狀況。只與配偶同住的男性滿意度最高，而與子女或其他人同住的女性的滿意度較高。

憂鬱量表的評估資料顯示，很多台灣中老年人有較高之憂鬱分數(10 分以上)，尤其是女性(25%，男性為 15%)。相較於男性，女性較不易感到有較高的個人控制力或自我生活控制力，覺得自主力低的比例為男性的 2 倍。一般來說，大部分的台灣中老年人都滿意或至少滿足於目前的居住狀況。依性別來看，男性以只與配偶同住者的滿意度最高，女性(不論是否有偶)則是與子女或他人同住者滿意度最高。

第六章：壓力與環境的挑戰

本章討論台灣地區中老年人所面臨壓力與環境挑戰的程度。壓力是造成疾病與破壞整體安適狀態的一大原因。壓力與第二型糖尿病、心血管疾病與慢性疾病有關，對於免疫功能、認知能力及身體活動的能力，也有負面的影響。此外，壓力與負面的生活事件，會造成憂鬱、焦慮及其他精神疾病。本研究檢視了個人與家庭生活中壓力及焦慮的程度、921 大地震這項重大災害造成的影響，以及與安全有關的壓力。所運用之資料來自 SEBAS 研究之問卷訪問結果，並以個案自述為基準。

壓力與煩惱

有關個人及家庭相關的壓力與煩惱，是根據個案對 7 項問題感到壓力或煩惱的程度來評估，包括個案本身的健康、經濟狀況、與家人的相處關係，個案家人或子女的健康、經濟狀況、工作，以及婚姻狀況。每項都以 3 級評分：沒有壓力或煩惱 (0 分)、有一些壓力或煩惱 (1 分)、有很大壓力或煩惱 (2 分)。將所有項目得分加總平均後，再分成無壓力 (所有項目得分皆為 0 分)、有些壓力 (平均 1 分以下)，與高度壓力 (平均超過 1 分)。

如圖 6-1 所示，雖然大多數的中老年人都認為或多或少有壓力存在，但也有許多台灣中老年人認為自己本身沒有個人或家庭方面的壓力或煩惱。認為有高度壓力者只有相當少數 (男性 5% 與女性 6%)。

圖 6-1 壓力或煩惱程度，按性別區分

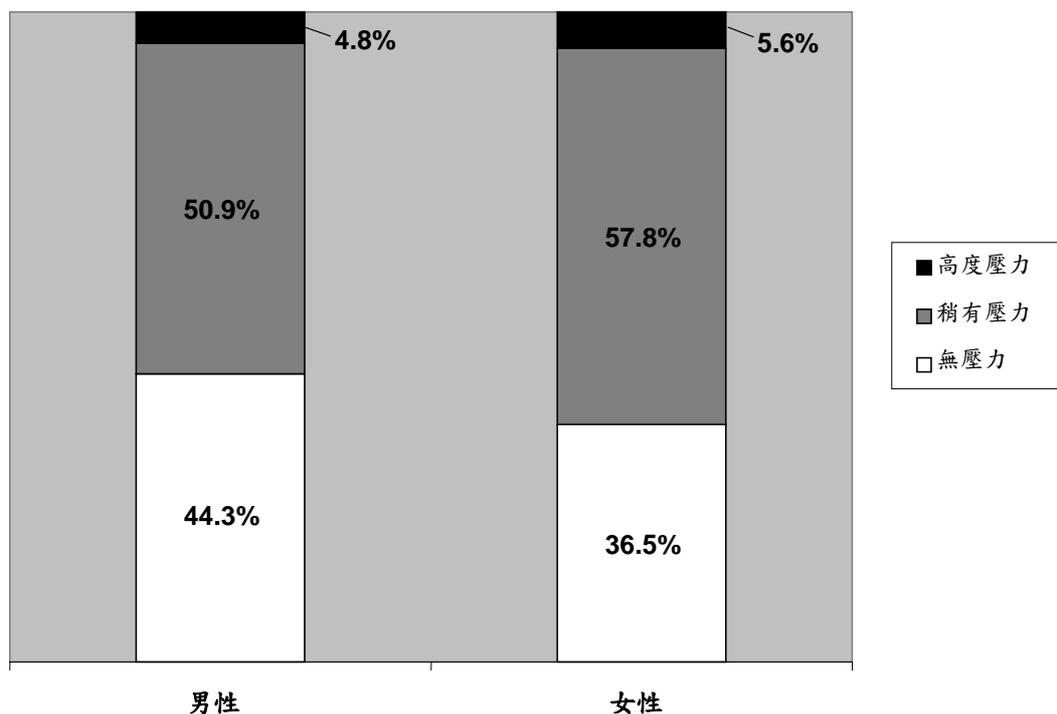
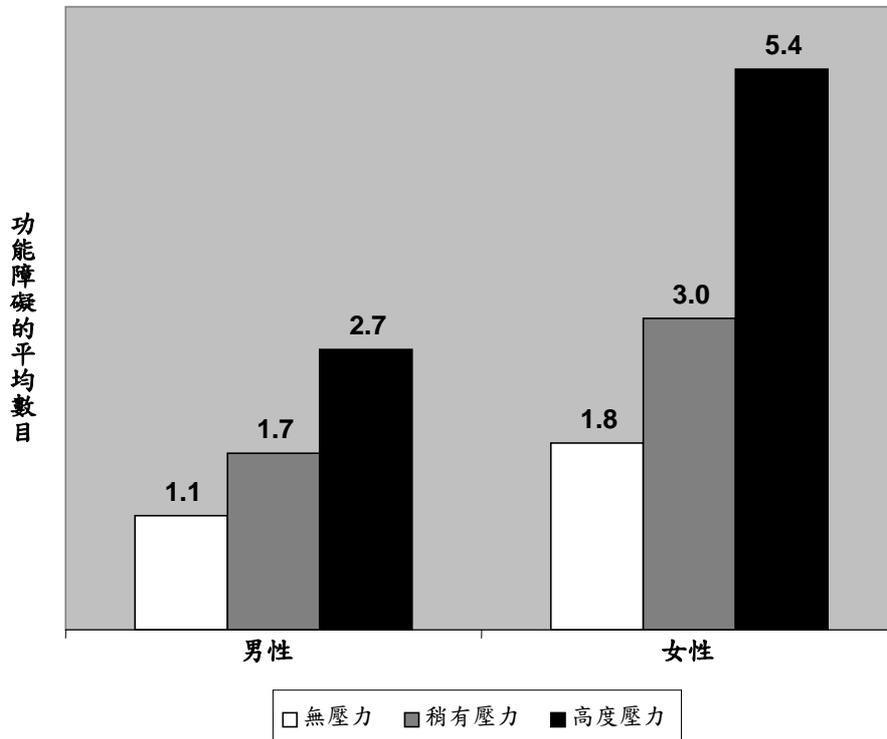


圖 6-2 顯示壓力程度與身體功能間之關係。身體功能是根據個案 ADL (共六項，見圖 4-3) 與身體活動 (共九項，見圖 4-5) 有困難之累計項目數，其累計項目數介於 0 至 15 之間。資料顯示壓力與身體功能障礙之間有明顯的關係，尤其是在女性。有高度壓力的女性中老年人平均有 5 項以上的功能障礙，沒有壓力的女性中老年人平均只有不到 2 項；男性則平均各有 2.7 項與 1.1 項的功能障礙。由於本項資料為橫斷面資料，因此這項結果不代表壓力一定會導致功能障礙；相反的，可能是因為台灣老年人的功能障礙，而使他們在生活中感受到較高的壓力。

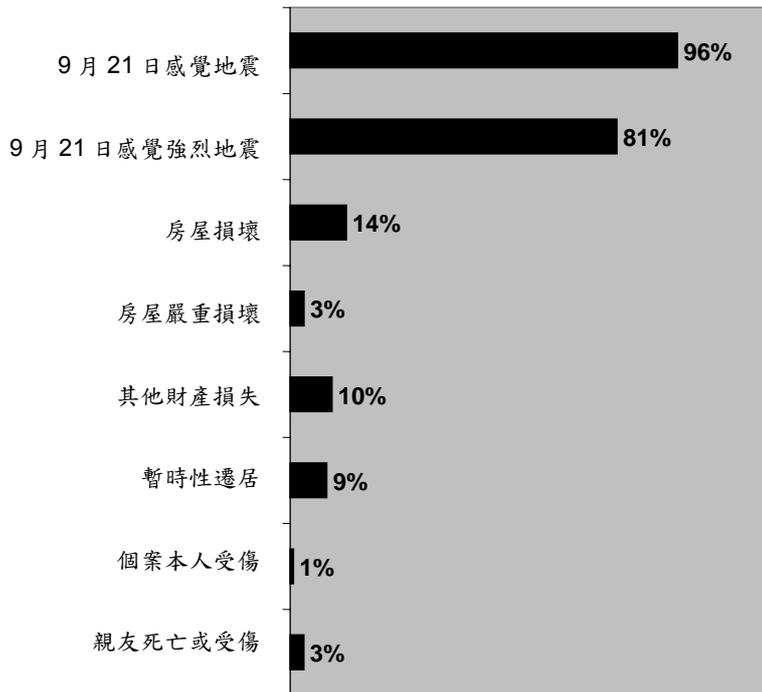
圖 6-2 平均功能障礙項目數，按壓力程度區分



地震

災難事件也會引起壓力與煩惱，且可能會帶來長遠的影響。在 SEBAS 規劃階段中，曾發生這類的環境挑戰，也就是 921 大地震；因此在實地調查開始前，便將關於地震經驗與地震造成的影響，加入調查的範圍。圖 6-3 顯示 921 大地震對台灣中老年人造成的負面影響，絕大多數的台灣人於 1999 年 9 月 21 日感受到集集大地震，幾乎所有人都認為這是一場很嚴重的災難。少部分的人自述地震和其餘震帶來負面的影響，例如 14% 的台灣中老年人自述 921 大地震或其餘震造成房屋損壞，但是只有 3% 為嚴重損壞，一成的人遭受其他財產損失，而 9% 的人曾暫時性遷居。只有 1% 個案本人在地震中受傷，但有 3% 的人親友在地震中不幸受傷或過世。

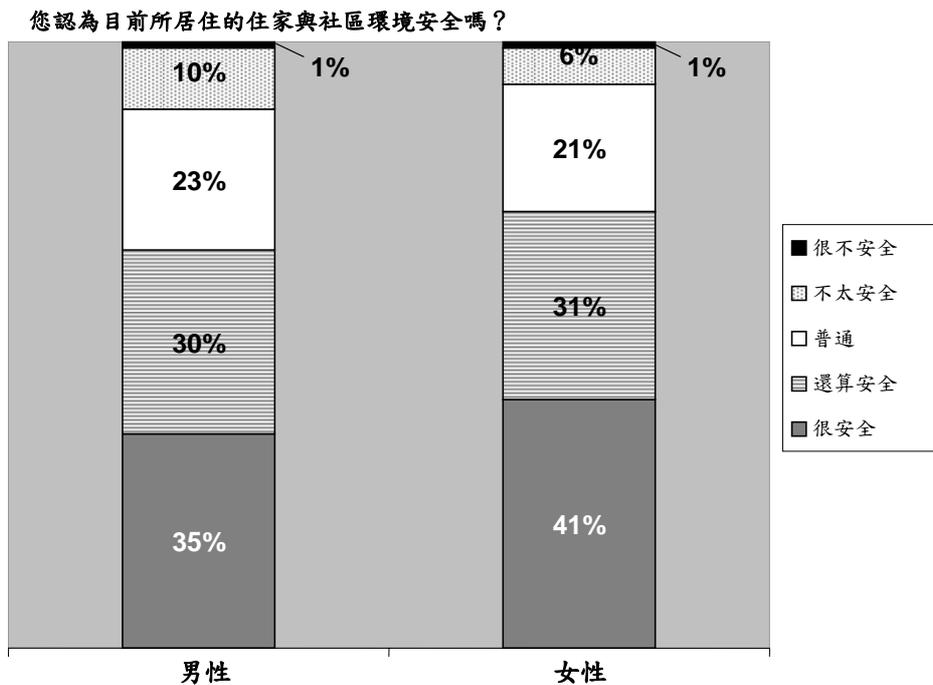
圖 6-3 921 大地震造成的負面影響



犯罪與安全

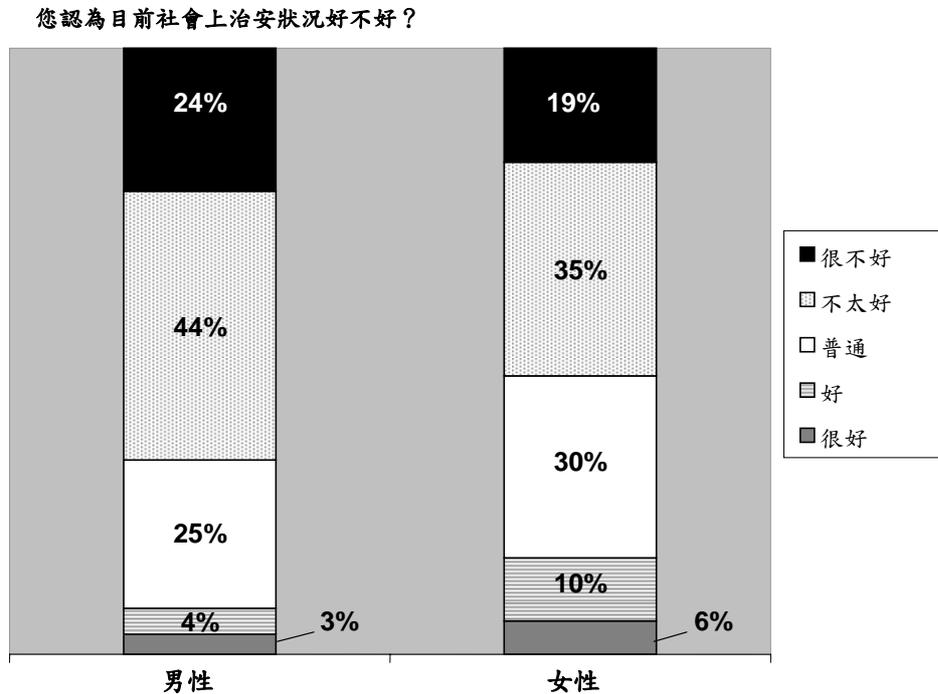
社區中犯罪與治安不佳的問題，也是環境壓力的來源。圖 6-4 顯示個案對於所居住的社區安全的看法。超過三分之二的台灣中老年人認為其所居住的社區還算安全或很安全，少數的個案則認為社區不太安全，而男性有此看法的比例較女性高（男性 11%，女性 7%）。

圖 6-4 對於社區安全的感受，按性別區分



雖然對自己所居住的社區環境整體感到安全，但只有 7%的男性與 16%的女性認為社會上的治安狀況好或很好 (圖 6-5)。超過三分之二的男性與半數以上的女性，則認為社會治安狀況不好或很不好。

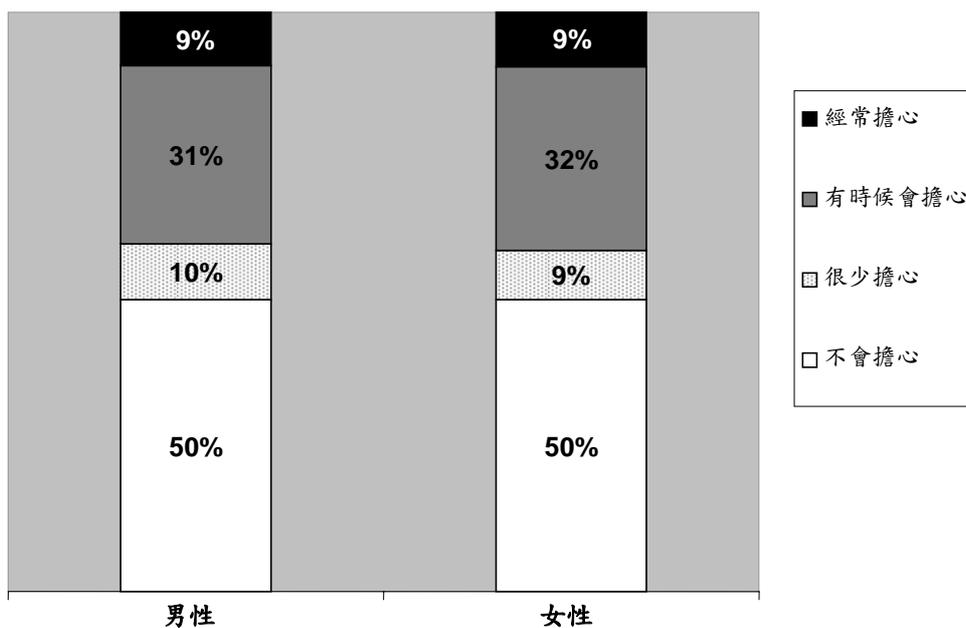
圖 6-5 不同性別對於社會治安的感受



通常台灣中老年人的不安全感，是反映出他們對社會整體治安的感受，而非個人本身的安全問題。如圖 6-6 所示，不到一成的台灣中老年人因為犯罪問題而經常煩惱自己或家人生命財產的安全，還有一半的人說他們一點都不擔心。

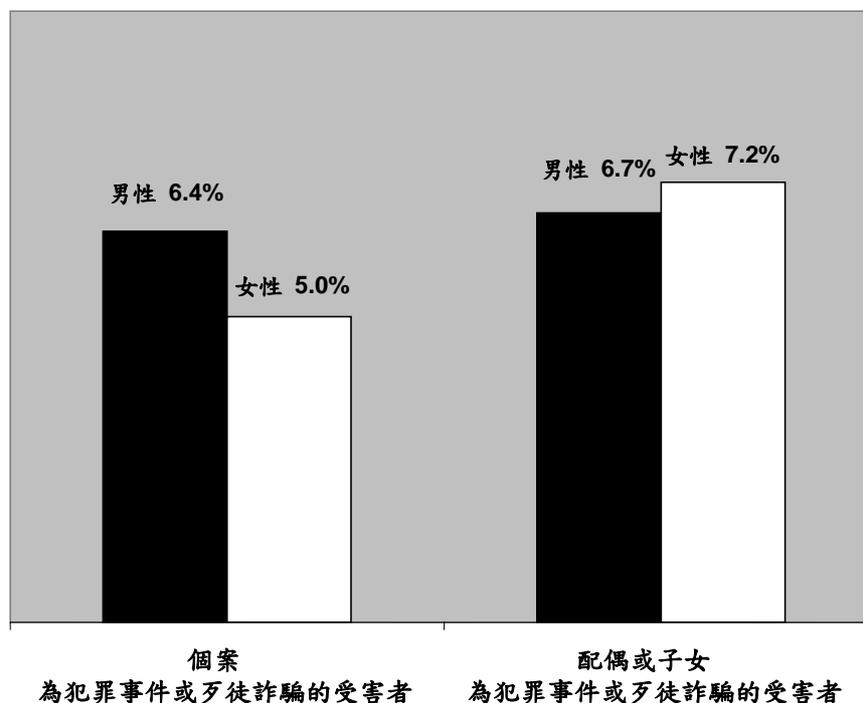
圖 6-6 對於治安的擔心程度，按性別區分

您是否會因為社會上的犯罪問題，而擔心您自己或家人生命財產的安全？



就實際犯罪受害而言，受害比例與台灣中老年人對治安的感受一致。在受訪前的一年當中，只有 6% 的男性與 5% 的女性，曾是犯罪事件或歹徒詐騙的受害者，而個案的配偶或子女為受害者的比例則略高（圖 6-7）。

圖 6-7 在過去一年中曾為犯罪受害者的比例，按性別區分



摘要

少部分的台灣中老年人在個人或家庭生活中感覺到高度壓力，但不論在男性或女性，認為有高度壓力者之功能障礙指數也較高，其因果關係仍有待釐清。

在環境挑戰方面，絕大多數台灣中老年人都經歷了 1999 年的 921 大地震，不過因此而遭受到房屋或其他財物受損、暫時遷離或因地震受傷的比例極低。大部分的中老年人對他們居住的社區感到安全，也很少會擔心自身或家人的安全，在受訪前的一年當中，只有少數曾因犯罪事件而受害或遭遇歹徒詐騙，但相當多人認為社會整體治安狀況不佳。

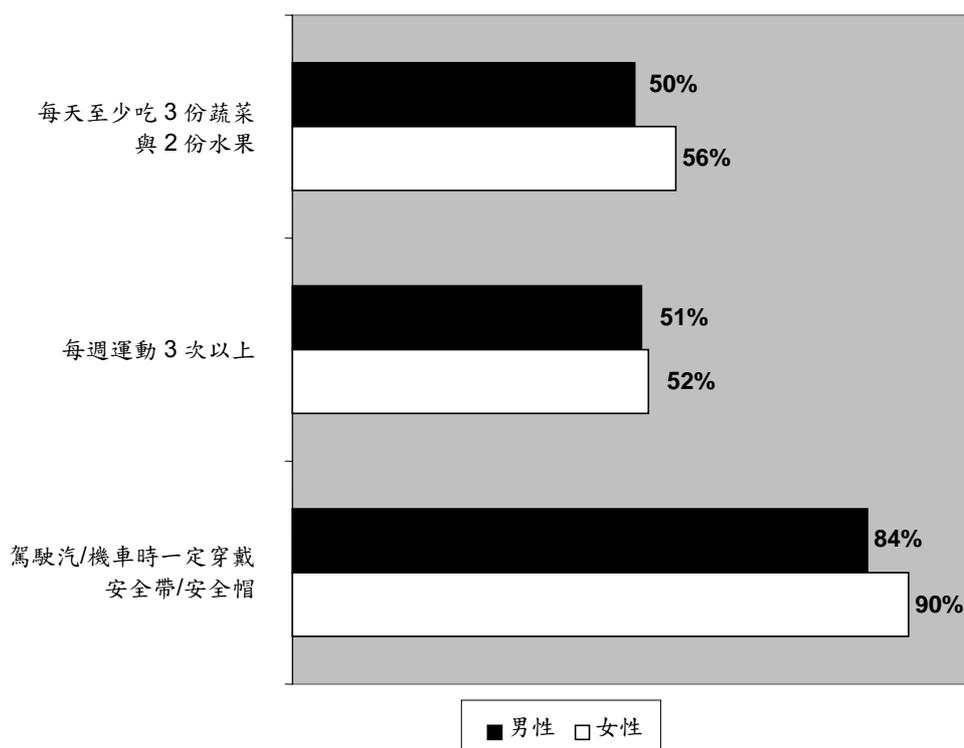
第七章：健康與社會行為

本章檢視台灣地區中老年人健康相關行為以及社會參與程度。有一些健康行為或是與其他人的社會互動，對健康及安適狀態可能具有保護作用，但是有些行為（例如菸酒、檳榔等物質之使用），則會產生負面影響。所運用之資料是根據樣本個案在家訪或在醫院進行健康檢查時之問卷訪問結果。

健康與安全習慣

圖 7-1 顯示有益於健康及安適狀況之行為資料。台灣地中老年人只有半數左右會攝取健康的飲食，也就是每天至少吃 3 份蔬菜及 2 份水果；每週至少規律運動 3 次的比例也只佔一半左右。但大多數的中老年人在駕駛或騎乘汽機車時會穿戴安全護具（安全帶或安全帽）。

圖 7-1 健康與交通安全行為，按性別區分



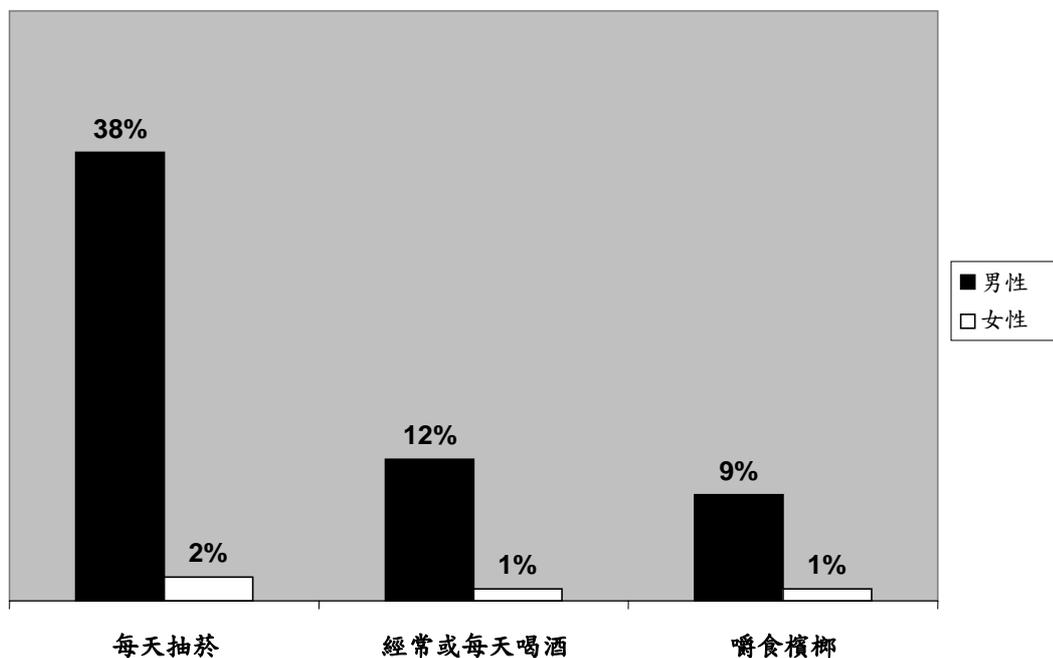
抽菸、喝酒、嚼食檳榔

女性中老年人有抽菸或喝酒的比例極低，但有相當多的男性有抽菸或喝酒的習慣（圖 7-2）。超過三分之一（38%）的男性每天抽菸¹¹，12% 的男性經常喝酒。此外，9% 的男性有嚼食檳榔的習慣。物質的使用可能對健康有害，不過喝酒卻不見得，事實上適量飲酒可能對認知功能與心血管疾病風險具有保護作用，至少對於男性是如此（Mukamal et al., 2003）。

¹¹ 每天抽菸的女性個案低於 2%。

圖 7-2 菸、酒及檳榔使用情形，按性別區分

過去 6 個月內：

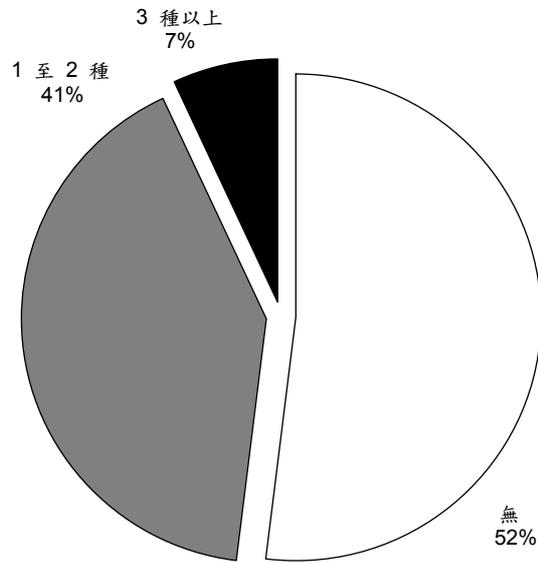


社會參與程度

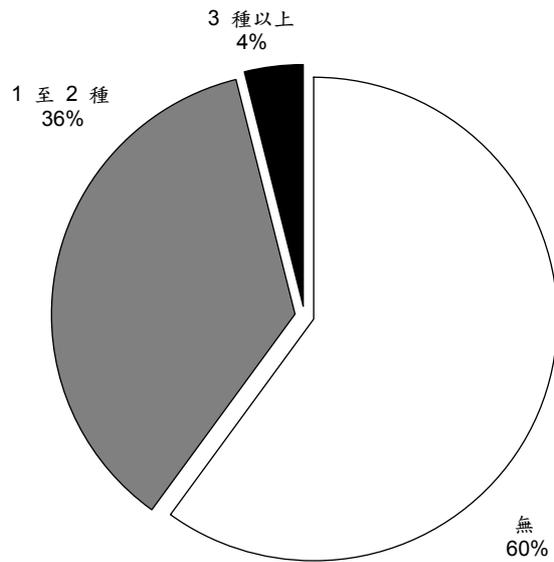
問卷訪問過程也詢問個案是否參加「社區交誼性團體」、「宗教團體」、「農會、漁會、工商行業團體工會、獅子會」、「政治性團體」、「社會服務性團體」、「同鄉會或宗親會」、「老人團體」、「老人學習活動」等任一種組織或活動：。半數以上的中老年男性與六成的中老年女性，沒有參加任何社會活動 (圖 7-3)。然而，也有不少人參加 1 至 2 項活動，少部份之中老年人 (男性 7%，女性 4%) 有非常活躍的社會參與力。

圖 7-3 社會活動參與，按性別區分

男性



女性



摘要

健康行為方面的資料顯示，只有半數左右的台灣中老年人攝取均衡的飲食，大約半數有規律運動的習慣。超過三分之一的男性每天抽菸，而經常喝酒或嚼檳榔者則相對較少，女性則幾乎都沒有這些習慣。資料也顯示超過一半以上的台灣中老年人，沒有參加任何社團或活動。

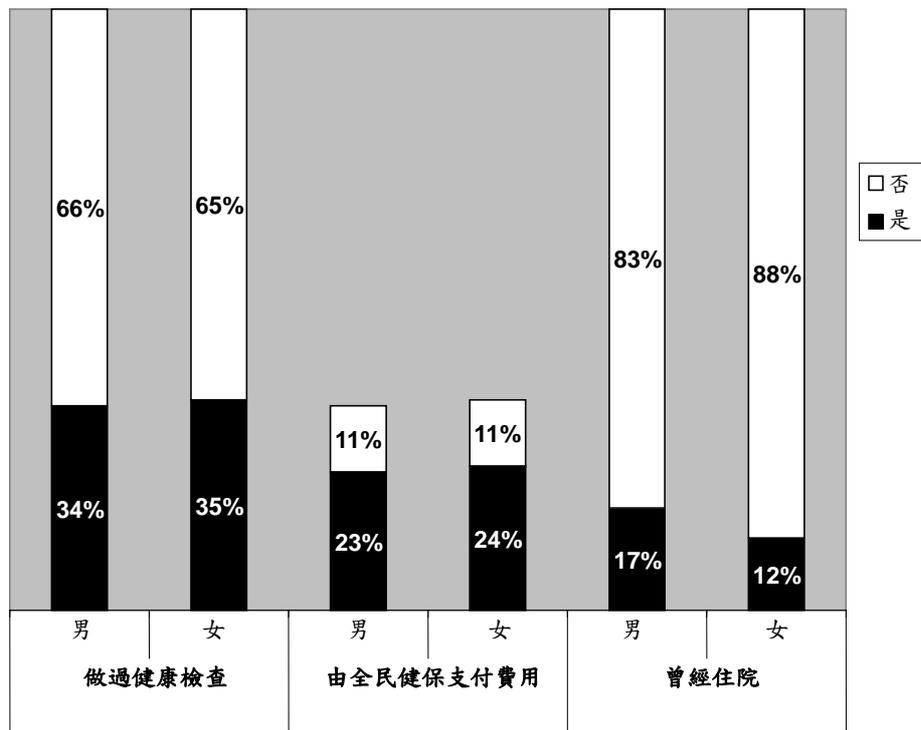
第八章：醫療服務的利用

本章呈現台灣地區中老年人在預防保健檢查、住院與急診等醫療服務利用，也檢視可用以進一步反映對醫療服務需求與利用之長期用藥情形。所運用之資料均根據個案自述，最後再針對台灣與美國中老年人的住院情形進行比較。

過去一年醫療服務利用

約三分之一的台灣中老年人在過去一年中曾做過健康檢查 (圖 8-1)，其中約有三分之二是由全民健保支付檢查費用。住院的比例不高，但是仍有 17% 的男性與 12% 的女性在過去一年內曾經住院。

圖 8-1 過去一年內醫療服務利用情形，按性別區分



在過去一年內曾經住院的中老年人當中，大約四分之一左右只住院一次 (圖 8-2)，而 13% 的男性與 10% 的女性曾住院 3 次以上。在住院天數方面，五分之二以上的男性與三分之一以上的女性的住院天數小於 5 天，但是各有 14% 在過去一年內住院超過 20 天 (圖 8-3)。

圖 8-2 過去一年內住院次數，按性別區分

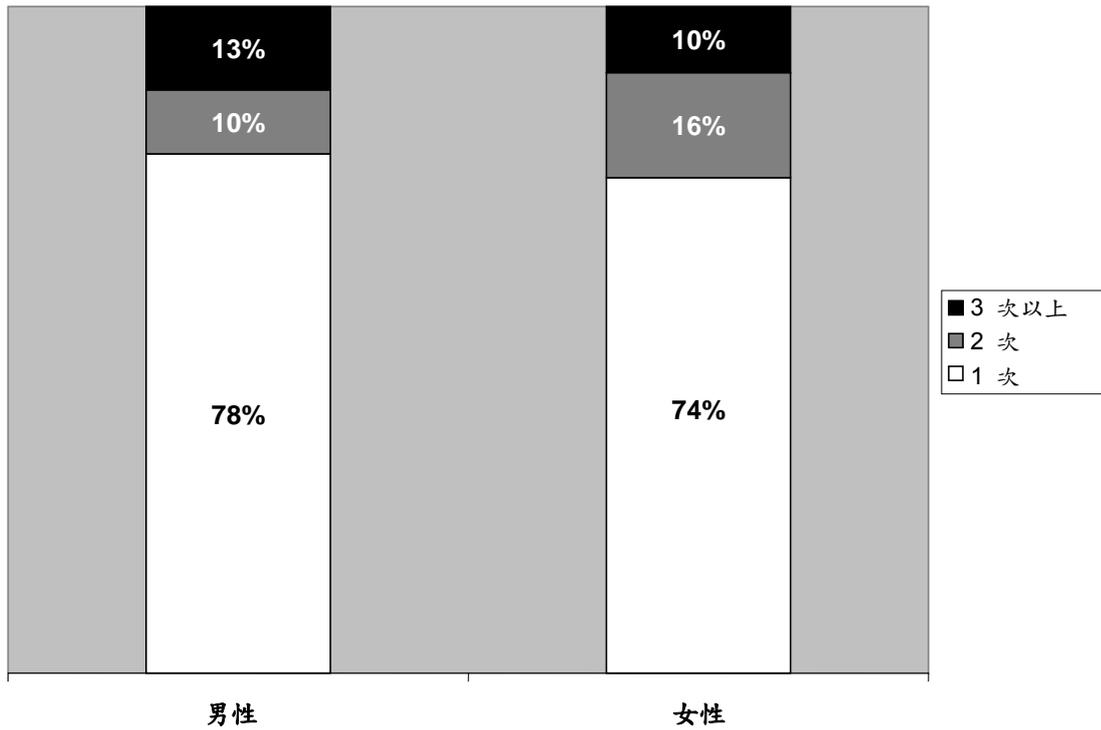
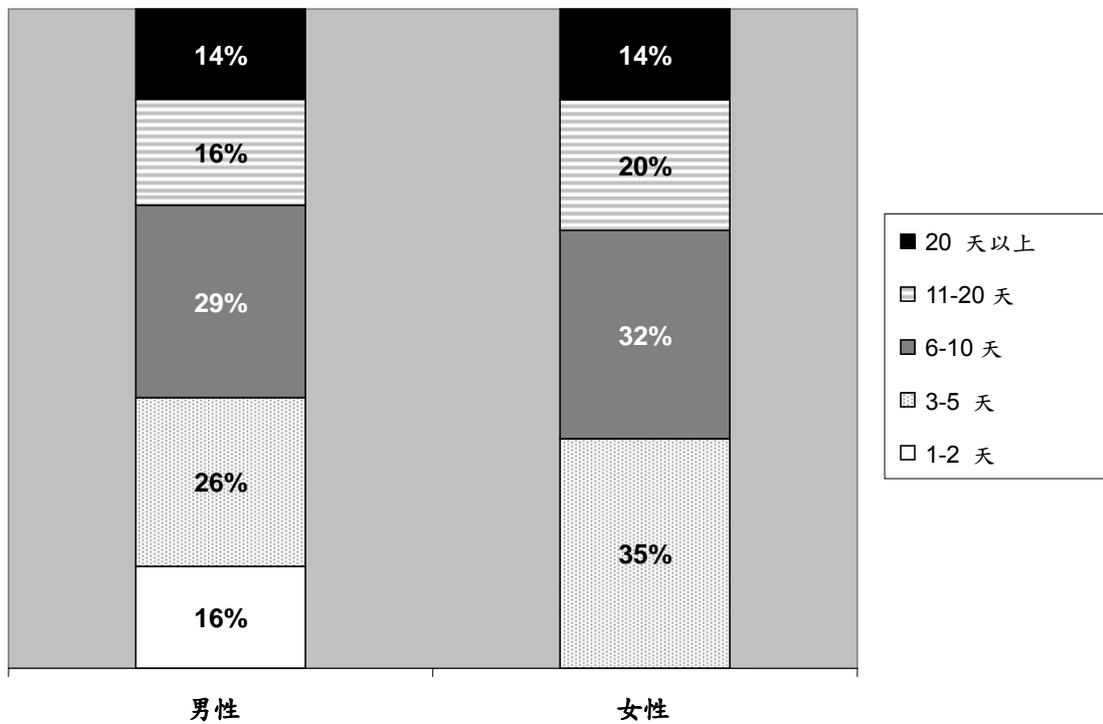
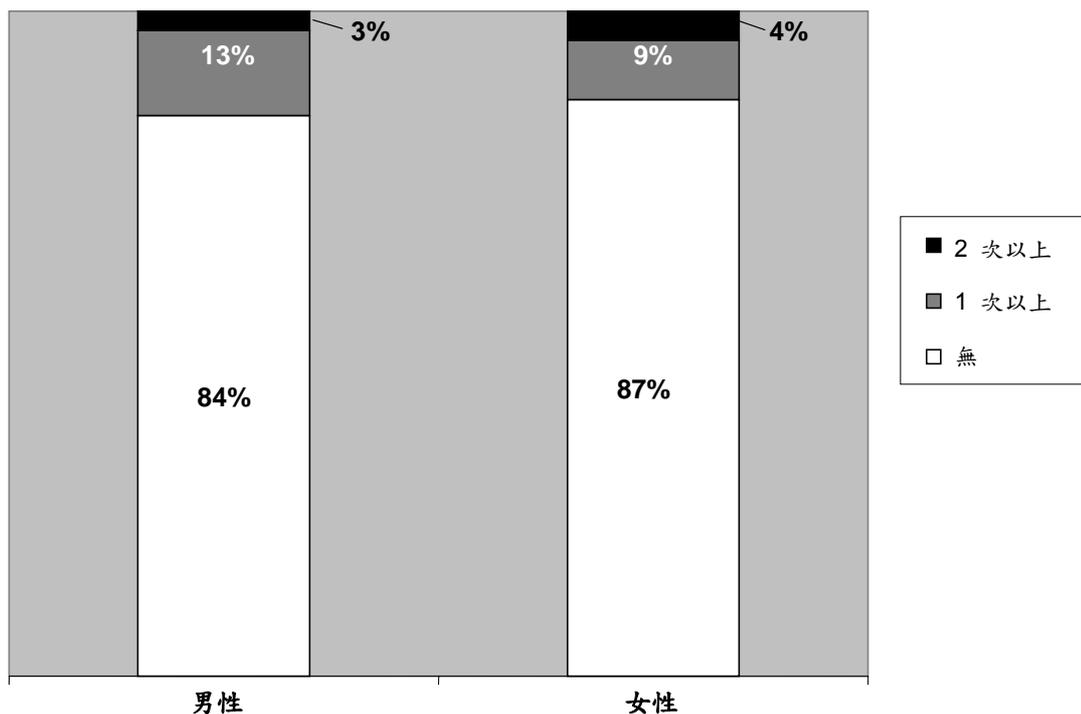


圖 8-3 過去一年內曾住院者之住院天數，按性別區分



大多數台灣地區中老年人在過去一年內未曾使用過急診服務 (圖 8-4)。少數的中老年人 (男性 13%，女性 9%) 曾急診 1 次，只有極少數急診超過 2 次以上 (男性 3%，女性 4%)。

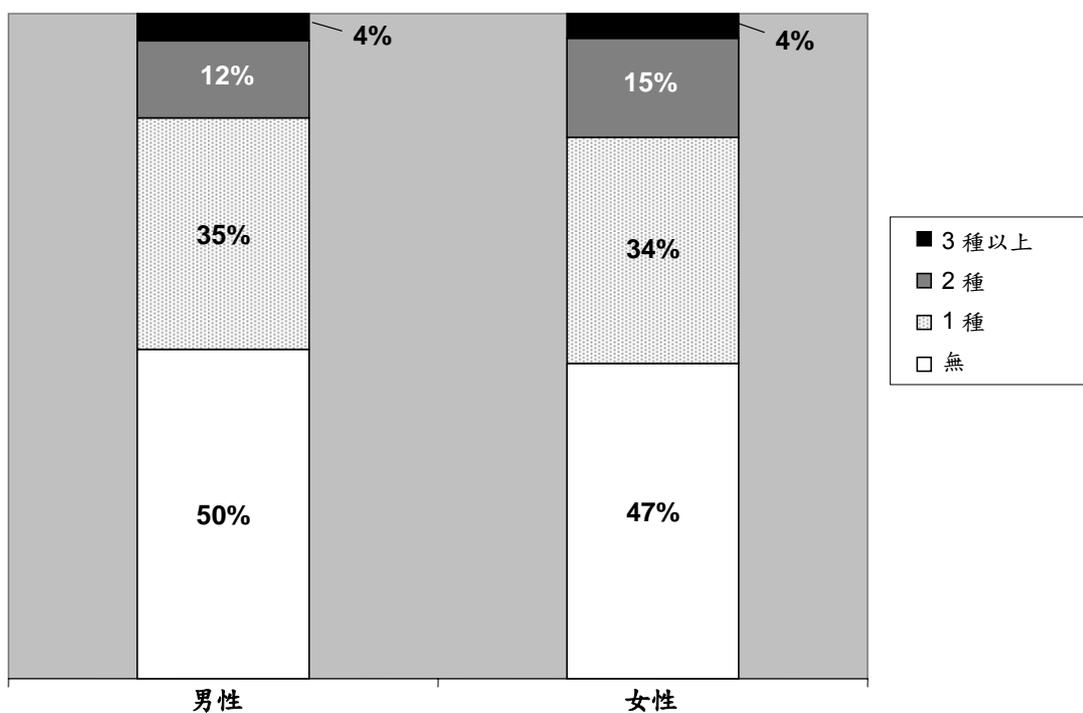
圖 8-4 過去一年內急診次數，按性別區分



藥物使用

台灣地區中老年人大約一半未長期使用任何藥物 (圖 8-5)，其他三分之一的中老年人則長期服用 1 種藥物，同時服用多種藥物者佔不到五分之一。

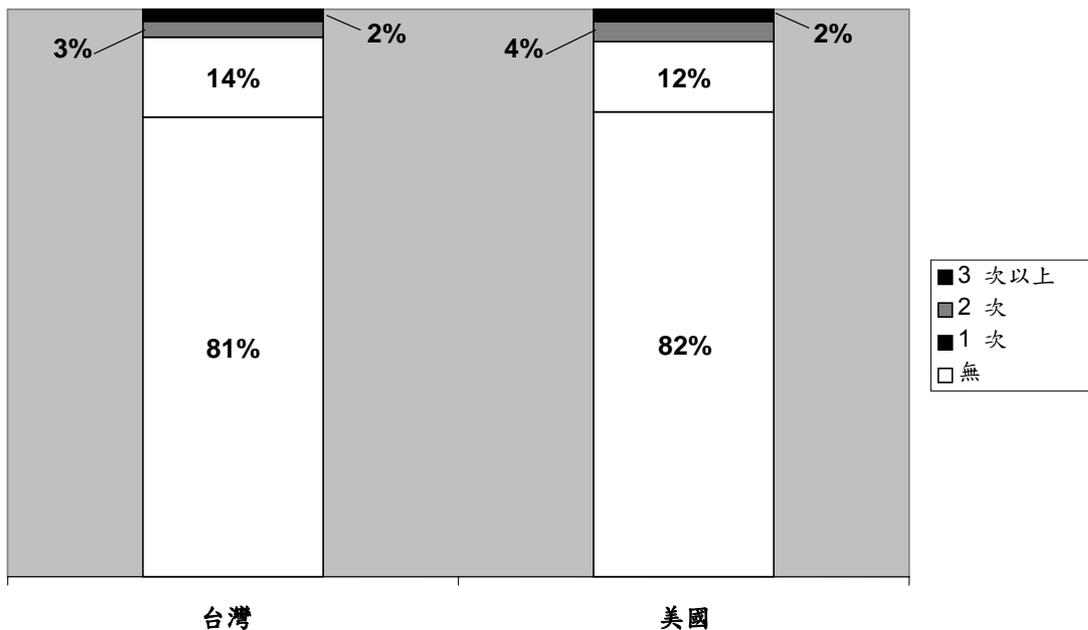
圖 8-5 長期用藥的情形，按性別區分



與美國比較

美國的資料來自 1998 年的「國民健康訪問調查」(National Health Interview Survey, 簡稱 NHIS)。為進行比較, 只採用 SEBAS 65 歲以上樣本資料, 以配合 NHIS 的年齡分組, 並將美國的資料加以標準化, 以符合 SEBAS 65 歲以上加權樣本的性別分布。如圖 8-6 所示, 兩國老年人的住院次數幾乎相同, 大多數在過去一年未曾住院, 而不論台灣或美國, 皆只有 2% 的老年人在過去一年內曾住院 2 次以上。

圖 8-6 65 歲以上老年人過去一年內住院次數, 台灣與美國比較



美國資料來源: Blackwell DL 等人 (2002)。美國人口健康統計摘要: 國民健康訪問調查, 1998 (表 19)。生命與衛生統計 10(207):56-57。美國國家衛生統計中心。性別根據台灣 SEBAS 之分布 (加權) 標準化。

摘要

台灣地區中老年人經常使用醫療照護服務的比例並不高, 只有三分之一的人自述在過去一年曾做過健康檢查, 其中三分之二是接受全民健保的成人預防保健服務。半數左右的中老年人長期服用至少 1 種藥物, 長期服用多種藥物的比例則不到五分之一。不到六分之一的男性與八分之一的女性, 在訪問的過去一年內曾經住院, 曾經使用急診的比例也類似。台灣與美國 65 歲以上老年人每人住院次數幾乎相同。

第九章：社會經濟地位

本章探討由個案主觀評估的社會經濟相對地位，以及教育程度與壓力及身體功能活動之間的關係。本章所運用的資料是以個案自述狀況為基準。

社會經濟相對地位

在 SEBAS 的訪問當中，會出示一張 10 階的階梯圖，由訪員告訴個案：

「這個樓梯代表在台灣的一個人所擁有的地位。最高的一階是代表在台灣條件最好的人(譬如說：最有錢、受最高教育、有最受人尊敬的工作)，最低的一階是代表在台灣條件最差的人(譬如說：最沒有錢、教育程度最低、沒有工作或是有最不受人尊敬的工作)。」

「你站在這梯子的愈上層就愈接近地位高的人，你站在這梯子的愈下層就愈接近地位低的人。」

「和所有台灣的人比較，以你自己目前的情形來看，你認為你自己應該是在這個樓梯的哪一階？請你指給我看。」

圖 9-1 顯示答案的分布情形。最普遍的回答是在 10 階之中的第 5 階，男性、女性各有超過四分之一(27%)的個案認為自己位於中間階層(第 5 級)。近六成的個案自認為在中間等級之下，14%的男性與 15%的女性認為自己位於最底層，也就是台灣社會經濟狀況最差的一群。相對來說，台灣地區中老年人會將自己排在中間等級之上者只佔少數，而且只有極少數(男性 6%，女性 4%)會將自己排在第 7 級以上。

台灣地區中老年人普遍認為自己的社會經濟地位低於其他人，此可能反應現實的情形。在第二次世界大戰後，台灣社會與經濟變遷快速，本研究中的個案(54 歲以上)，可能認為自己的社會地位，比不上那些受過高等教育、經濟上較為成功的年輕世代。另外一種解釋則是，自評社會地位不高，可能是受到傳統中國文化中謙虛的美德影響(Crittenden, 1991; Lee & Seligman, 1997)。

一項針對自覺階級地位的分析模型顯示，教育程度、收入與丈夫的職業等 3 項傳統、客觀的社會經濟地位評估指標，可有效預測社會地位排名高低(Goldman et al., forthcoming; 見表 9-1)。其中教育程度不僅只是看個案本身所接受的教育，配偶及最高教育子女之教育程度也重要因素。此外，擁有汽車也與較高的排名有關。

族群別與兒子的數目這 2 項社會因素，是主觀自評階級地位高低的重要預測指標。在控制客觀社會經濟地位因素後，閩南人與外省人比客家人會給自己較低的排名(但只有閩南人與客家人間的差異具統計上之顯著性)。此外，有 2 個兒子以上的個案，自評地位較沒有兒子的人高。

圖 9-1 相對於台灣民眾之社會經濟地位，按性別區分

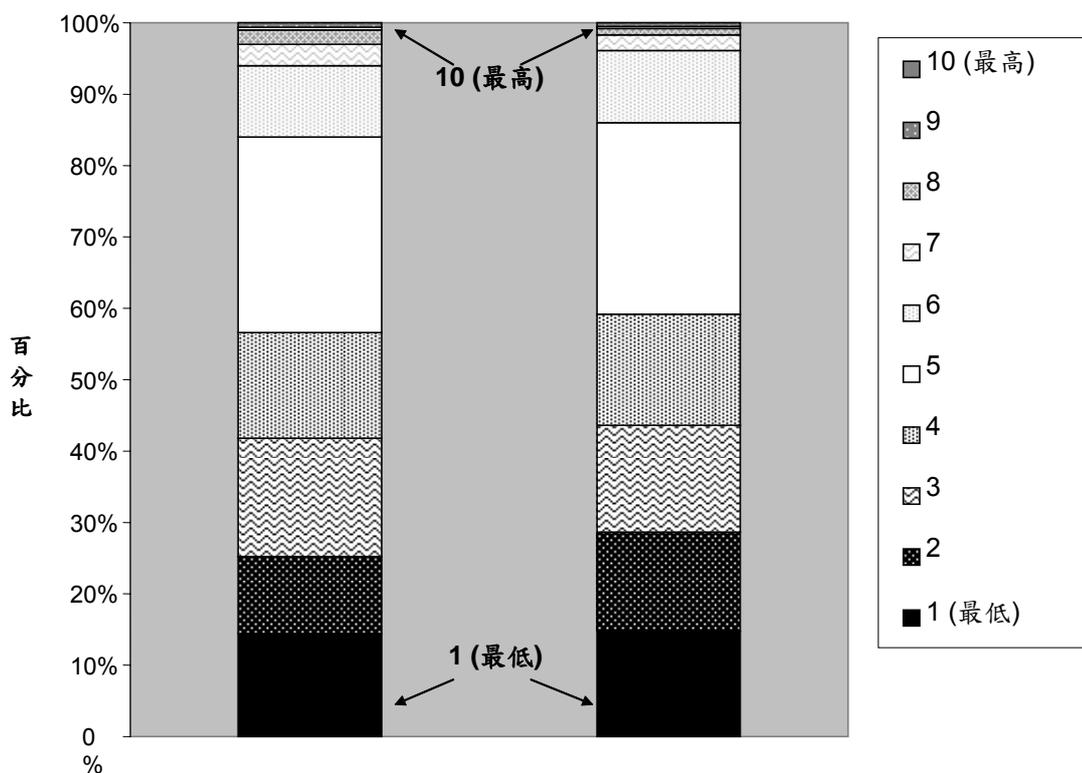


表 9-1 社會經濟相對地位之重要預測指標

客觀社會經濟地位評估指標

- 個案接受教育年數 (+)
- 配偶接受教育年數 (+)
- 子女中接受教育的最高年數 (+)
- 個案與配偶的年收入 (+)
- 男性/丈夫所從事職業的社會經濟指數 (+)
- 擁有汽車 (+)

社會因素

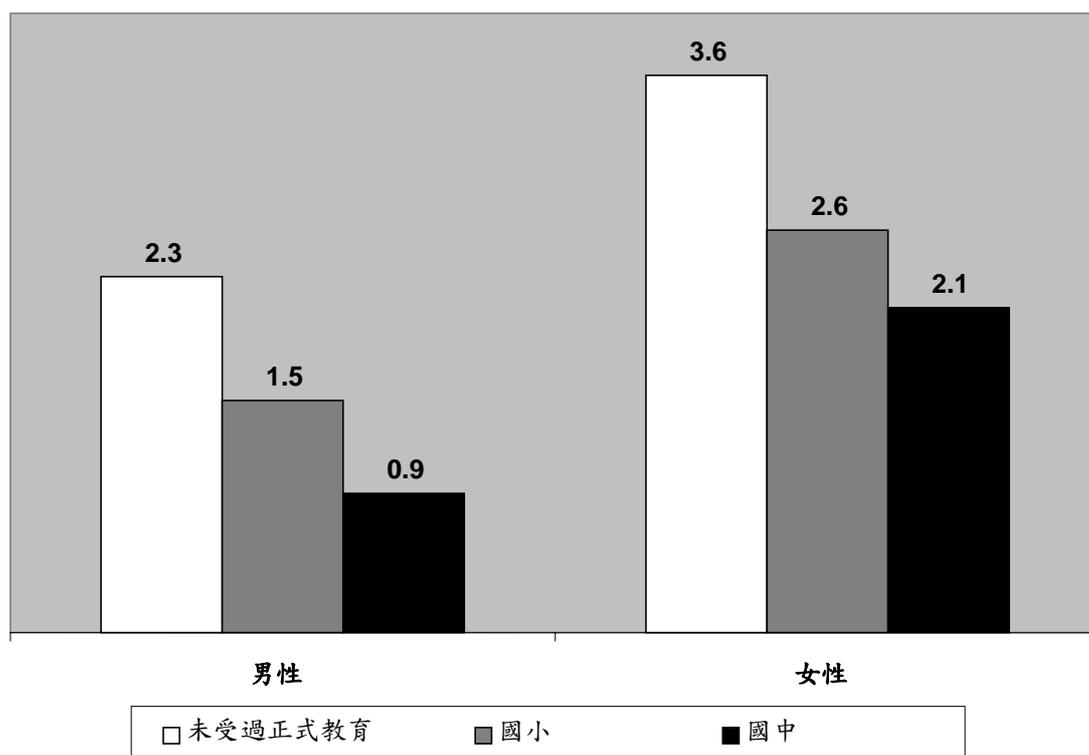
- 族群別(閩南人相對低於客家人)
- 兒子數目 (2 個兒子以上相對高於沒有兒子)

教育程度與身體活動功能之關係

在傳統上，教育對於中華文化的深遠影響，至少可追溯至漢代（西元前 206 年）。本研究的結果顯示，個案及配偶與子女最高的教育程度，為主觀評量相對社會經濟狀況最重要的決定因子，此項發現強調教育因素在台灣的基本重要性 (Goldman et al., forthcoming)。許多研究指出，社會經濟狀況通常與健康及死亡有關 (Adler & Newman, 2002; Adler & Ostrove, 1999; Fuhrer et al., 2002)。因此，值得考慮教育程度與健康狀況（身體活動功能）之間的關聯。由於台灣地區中老年女性本身的教育程度通常不高，而女性一般會根據丈夫的教育程度推衍出自身的社會地位與經濟優勢，因此使用丈夫的教育程度作為指標。和收入或主觀社會地位不同的是，教育程度並不會受到晚年健康狀況的影響。

圖 9-2 顯示不同教育程度的中老年人，有身體功能障礙 (限制) 的平均項目數。身體功能的評估包括六項日常生活活動 (ADL) (圖 4-3) 以及九項身體活動是否有障礙 (圖 4-5)，障礙項目總數介於 0-15 之間。不論男性或女性，教育程度較高者，平均功能障礙較少。例如，丈夫未受過正式教育之老年女性，其平均功能障礙為 3.6 項，而丈夫至少接受國中教育者，平均為 2.1 項。男性 (根據個案本身的教育程度) 未受過正式教育者之功能障礙為 2.3 項，至少接受國中教育者為 0.9 項。

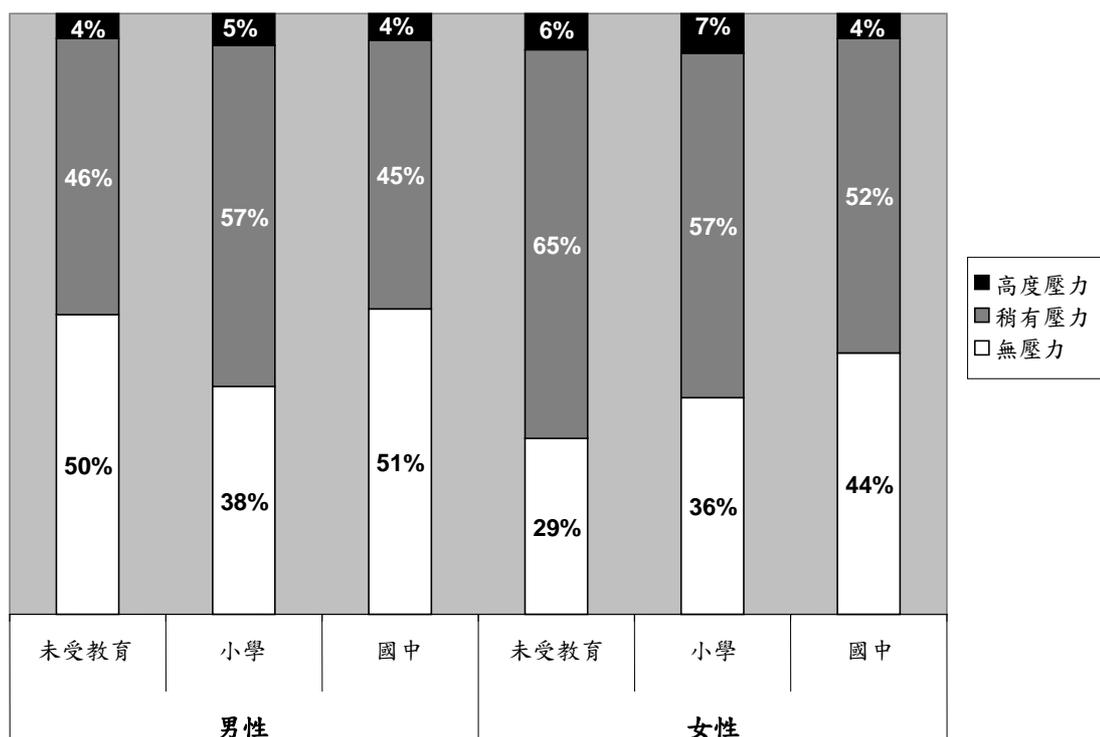
圖 9-2 身體功能障礙平均項目數，按男性個案或女性個案配偶之教育程度區分



教育程度與壓力之關係

社會經濟地位對健康的影響，其中一個可能的機制是經由壓力。如果社會經濟地位較低者，在生活中所感受的壓力比社經狀況高者為高，即可能會對其健康與安適狀態產生重要影響。圖 9-3 顯示不同教育程度者，其個人或家庭相關壓力程度 (其評估方式詳見第六章)。這些結果顯示，丈夫教育程度越高的女性，其壓力程度越低，其可能因教育程度與身體功能障礙之間呈現反相關。然而，男性本身的教育與自覺壓力程度之間，似乎沒有明顯的關聯。受過小學教育的男性壓力最大，而未受過教育或至少國中以上學歷的人壓力較小。

圖 9-3 壓力程度，按男性個案或女性個案配偶之教育程度區分



摘要

在社會經濟地位方面，台灣地區中老年人普遍認為自己的社會經濟地位低於其他人口。在 10 級代表社會經濟狀況最高的 1-10 級自評量表中，絕大多數老年人認為自己的社會經濟狀況在 5 分以下。多變項分析的結果顯示，客觀條件如教育、收入及職業，為此主觀衡量指標之顯著決定因素；而社會因素如族群別、有無兒子等也會影響個人所感受到的社會地位。

在台灣地區，教育程度是決定社會地位的基本要素，不論在男性或女性，教育程度也與身體功能呈正相關。相較之下，男性教育程度較高者，或是女性其配偶教育程度較高者，較不會有身體功能障礙之問題。對女性而言，配偶之教育程度較高者，自覺壓力程度也較低，但在男性則未發現教育程度與自覺壓力間之明顯關聯。

第十章：自評健康狀況

本章紀錄個案自評之整體健康狀況，並討論台灣中老年人自評健康狀況的預測指標。世界各國有許多研究指出，自評健康狀況對於死亡率、功能衰退情形、未來罹病率與後續醫療服務利用情形，是一項一致且有力的指標（如 Idler & Benyamini, 1997; Benyamini & Idler, 1999; Idler & Kasl, 1995; Haga et al., 1995; Wolinsky et al., 1995）。證據顯示，這些自我評量反映出健康與安適狀態之廣泛性評估，不僅包含身體機能，也包含心理安適狀態與社會功能情形。自我評量也顯現出未被發現的重要資訊，即使在調整其他身體功能指標（包括自評與臨床評估項目）、行為與心理社會危險因子及環境因子之後，大部分的研究發現這項評量仍是可單獨預測日後健康狀況的指標。本章最後則為個案目前的健康狀況，與前一年以及同年齡層者之比較。

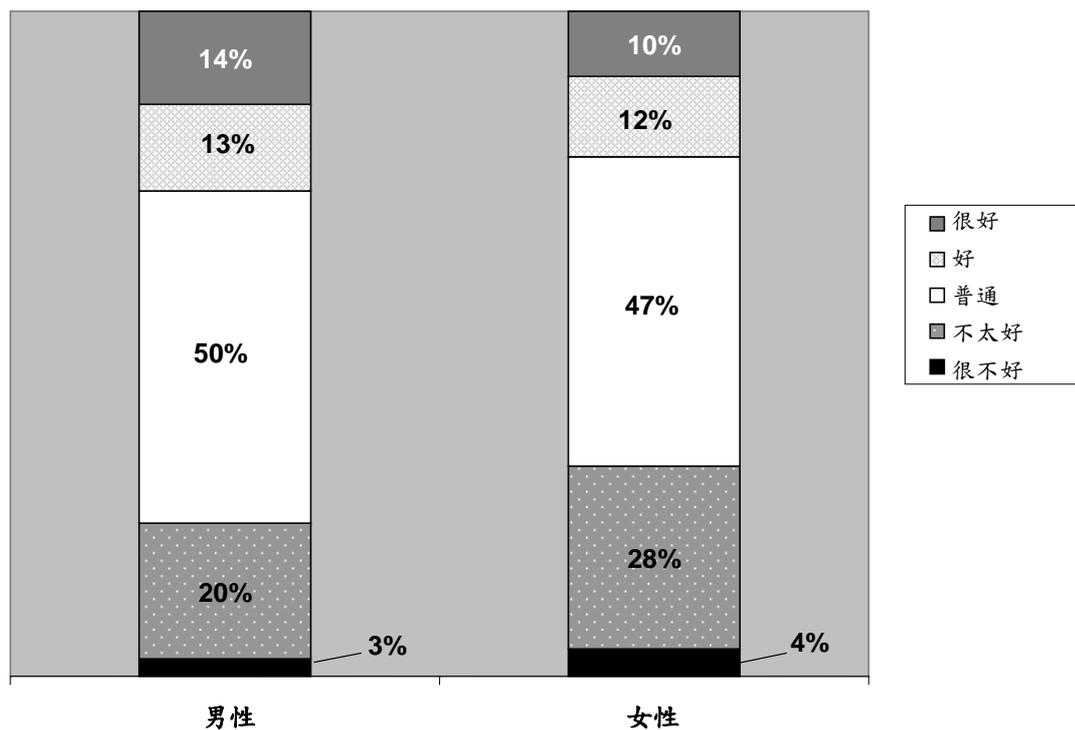
自覺整體健康狀況

自評健康狀況的評估，是根據一個簡單的問題，即「你對你現在的健康情形，認為是很好、好、普通、不太好，還是很不好？」。如圖 10-1 所示，約半數的個案認為自己的健康狀況「普通」；然而，也有相當多的台灣中老年人認為本身健康「不太好」或「很不好」（男性 23%，女性 32%）。只有七分之一的男性與一成女性認為自己健康「很好」。

一項自評健康狀況的預測模型顯示，各項身體健康測量結果是民眾自評健康的重要決定因子（Goldman et al., forthcoming; 見表 10-1）。尤其是民眾自述之行動限制、慢性病數目、過去一年發生嚴重的跌倒或受傷、用藥情形、疼痛程度與大小便失禁等，這些項目對於自評健康都有重大的影響。除此之外，有些根據理學檢查的臨床危險因子，也是自評健康的預測指標。其中最重要的是身體質量指數（BMI）、總膽固醇（TC）對高密度脂蛋白（HDL）比值（僅男性，女性則否），以及是否有脂蛋白元 E（APOE） ϵ 4 對偶基因（僅女性，男性則否）。這些生物指標的重要性，可能是因為個案將對這些健康危險因子的知識併入對健康之自我評量所致。然而，這項說明無法解釋 APOE 基因型的影響，因為個案並不知道自己的基因型。這個結果顯示， ϵ 4 對偶基因的負面影響，可能不僅止於經常被提及之心臟病或阿滋海默症這兩種疾病而已。

心理安適狀態的評估，也是自評健康狀況的重要指標。憂鬱症狀以及個人與家庭相關壓力及煩惱（評估方式詳見第五章及第六章），都會對自評健康造成不良的影響。

圖 10-1 自評健康狀況，按性別區分



即使控制臨床與自述的生理與心理健康狀態因素，許多健康行為、社會參與、以及社會經濟狀況等仍然與自評健康有關。健康飲食與經常運動者，自評健康狀況較好。然而，與預期相反地，每天抽菸者的自評健康狀況也較好。在女性當中（男性則否），有較高之社會活動參與力者，亦有較好之自評健康。最後，自覺社會地位較高的個案（評估方式詳見第九章），自評健康狀況亦較佳。

表 10-1 自評健康狀況之顯著預測指標

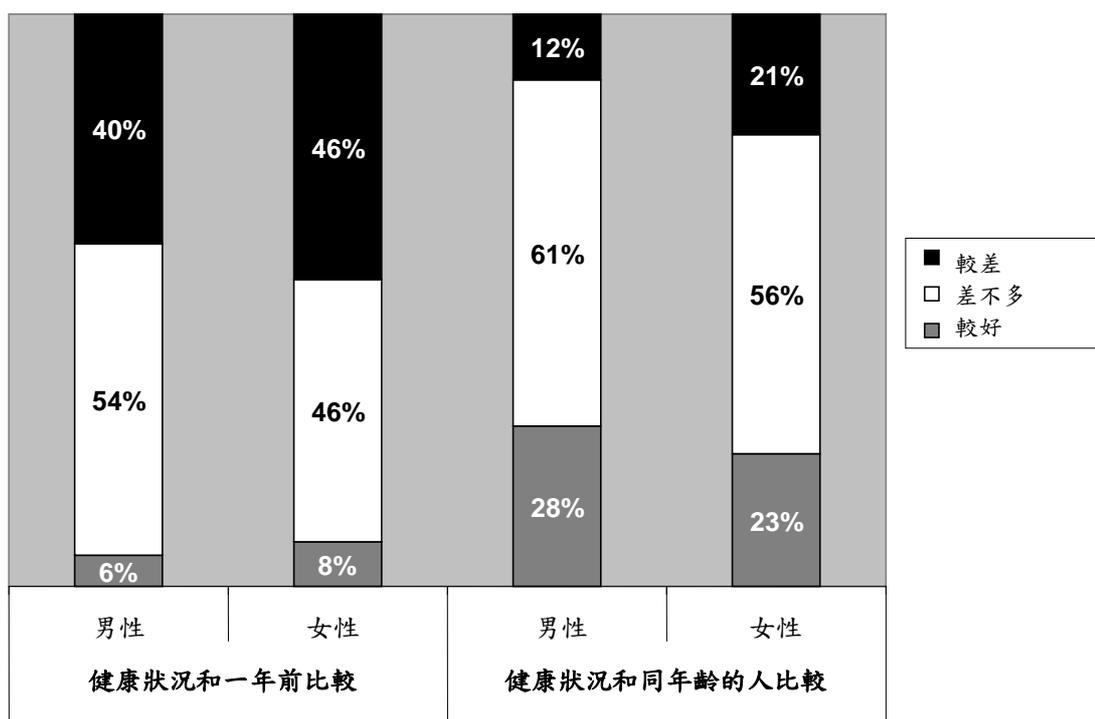
<u>自述身體健康狀況</u>	
目前罹患疾病或慢性病項目數 (-)	
身體活動障礙項目數 (-)	
過去一年因跌倒或受傷造成走路或洗澡不便 (-)	
長期用藥物項目數 (-)	
疼痛或不適的程度 (-)	
大小便失禁的問題 (-)	
過去一年內住院天數 (-)	
<u>臨床危險因子</u>	
BMI (呈曲線關係，BMI 過高與過低，都與較差的自評健康狀況有關)	
TC/HDL (-，只有男性)	
Cortisol/DHEA-S (-，只有男性)	
APOE ε4 對偶基因 (-，只有女性)	
<u>心理安適狀態</u>	
CES-D 量表 (-)	
壓力與煩惱指數 (-)	
<u>健康相關行為</u>	
每天至少吃 3 份蔬菜及 2 份水果 (+)	
經常運動 (+)	
過去 6 個月每天抽菸 (+)	
<u>社會與社經因素</u>	
社會活動參與數 (+，只有女性)	
自覺社會經濟狀況等級 (+)	
<u>人口學特色</u>	
年齡 (-，但較老年者的影響較少)	
女性 (-)	

相對健康狀況之自我評量

除了整體健康狀況，也詢問個案：「和一年前比起來，你看你現在的健康情形是比較好、差不多或是比較差？」如圖 10-3 所示，相當高比例的台灣中老年人認為自己的健康狀況比一年前差 (男性 40%、女性 46%)。這是可以想像的，因為到這個年紀，很少人會認為自己的健康狀況有會所進步。

另外，個案也被詢問其本身健康情形與同年齡層大多數人之比較。多數認為自己的健康狀況與同年齡者差不多，然而，比起男性，女性更容易認為自己的健康狀況較差 (女性 21%，男性 12%)。

圖 10-2 相對健康狀況之自我評量，按性別區



摘要

近四分之一的台灣中老年男性與三分之一的台灣中老年女性，認為自己現在的健康情形「不太好」或「很不好」。因為這項評估包含健康的多重領域，結果可能比觀察到的生理與心理狀態，更能顯示台灣中老年人的整體安適狀況。分析顯示自評健康狀況不只與生理及心理健康有關，也會受到健康相關行為、社會參與度與自評相對社會經濟地位的影響。

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台灣地區參與計畫人員

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註：表列人員所屬單位別係以計畫執行當時為準

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