A COMPARISON OF HEALTH STATUS AND USE OF WESTERN AND TRADITIONAL CHINESE MEDICINES AMONG THE ELDERLY BY CULTURE

by

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ABSTRACT

There is clear evidence that variations in health exist across cultures. Differences in mental, physical, and functional health, service utilization patterns, health beliefs, and health management behaviors have been found between the Chinese and the general North American elderly. Health and cultural differences also contribute to variations in medication use. For the Chinese elderly, medication use is complicated by dissimilar medication metabolism, and the concomitant use of Western and traditional Chinese medicines (TCM), which may result in greater risks for adverse drug reactions, medication non-compliance, and increased cost.

Information on the determinants of medication use by culture is lacking. Numerous methodological problems exist in the literature on the study of minority cultures and the determinants of medication use including sampling, measurements, and statistical analysis. In addition, there is no previous study on the type of TCM available to the general public. In the present study, the sampling issue was addressed by a phonologically based surname search method, which yielded a high hit rate (86.1%), and this method was representative and user friendly. The Minimum Data Set for Home Care and a supplementary questionnaire on cultural measures were used to generate comprehensive, reliable and valid data. Multivariate linear and logistic regression analysis, as well as examinations of interaction terms were employed. The availability and standard of the TCM products sold in the Kitchener/Waterloo area were surveyed, and results indicated serious labelling inadequacies and violations of the Food and Drugs Act.

Four sets of data were analyzed for this study: the Chinese-Canadians in the Kitchener/Waterloo area; the Red-Cross Canadians from 6 Ontario cities; the Chinese-Hong

Kong; and the general Canadian population. Significant differences were found in socio-demographic variables like age, marital status, education level, and living arrangement. For measures of health status, the Chinese-Canadians were the healthiest, followed by the Red-Cross Canadians, then the Chinese-Hong Kong.

Determinants of medication use were analyzed for the Chinese-Canadian and the Red-Cross Canadian samples. Over 50% of the Chinese-Canadians used TCM for a combination of reasons. More respondents in the Red-Cross Canadian sample used all forms of medications, and the number of medication used was also higher for the Red-Cross Canadians. Variations existed in the determinants of medication use within culture and across cultures. For the Chinese-Canadians, determinants for any medication use were country of origin from Southeast Asia (OR=8.71), lived with child (OR=0.22), and number of diseases (OR=17.09); for TCM use, the determinants were health beliefs (a positive curvilinear relationship), presence of pain symptoms (OR=5.82), and being hospitalized (OR=15.10); for combined medication use, they were lived with child (OR=0.15), presence of pain symptoms (OR=4.45), presence of social isolation problems (OR=6.25), and being hospitalized (OR=15.71); for Western medicine use, they were lived with child (OR=0.14), presence of physical health problems (OR=11.46), and number of diseases (OR=15.17); for polypharmacy including TCM, they were presence of social isolation problems (OR=3.85) and number of diseases (OR=4.49); where for polypharmacy excluding TCM, the determinant was number of diseases (OR=3.78). Determinants for number of any medication used were number of diseases and an interaction term between perceived poor health and number of diseases, which accounted for 61% of the variances; for number of TCM used, the determinants were formal services used,

pain symptoms, and an interaction term between social isolation problems and number of diseases, which explained 32% of the variances: for number of Western medicine used, they were perceived poor health, physical health problems, and number of diseases, which accounted for 56% of the variances. Variations were found within the Chinese-Canadians. Pain symptoms and being hospitalized were only significant for medication use involving TCM. Possible reasons to this were discussed.

For the Red-Cross Canadians, determinants for Western medication use were cognitive performance score (OR=0.70) and number of diseases (OR=2.26); for polypharmacy, the determinants were feels lonely (OR=3.51), number of diseases (OR=1.64), and medication not reviewed (OR=0.23). Determinants for number of Western medication used were cognitive performance score, number of diseases, perceived poor health, and medication reviewed, which accounted for 30% of the variances. Variations existed in the determinants of medication use by culture. Medication reviewed and feels lonely, although present in similar proportions in the two cultures, were only significant for the Red-Cross Canadians. Reasons contributing to this were discussed.

In conclusion, there is strong evidence that the health status and medication use patterns are different by culture. These variations have important implications to policy and program formation and to future research.

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爸爸媽媽，沒有你們的愛、鼓勵和犧牲，我是沒可能完成所定下的目標。你們從小给我的教導是我人生的座右銘，也是我生命的動力。女兒一生感激！

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It is not possible to list all those who have helped me reaching this milestone, but the support from the following friends must not go without mention. Stephen and Natalie, Sue-Ann and Chris, and many more, thank you for lending a helping hand that was timely and special to me.

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DEDICATION

To my family, who is the motivation of my drive and energy!

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CHAPTER 1. INTRODUCTION

After decades of research, gerontologists have come to a clear consensus that older adults are characterized by their heterogeneity rather than their homogeneity. As people age, their life experiences contribute to their uniqueness physically, psychologically and culturally. This diversity makes it inappropriate to talk about "the elderly" as a single social category without stereotypical oversimplification (Fry, 1990). Cultural and ethnic variations in health have been known for some time, and strict medical or biological models have not been able to explain more than a fraction of these variations. The remainder must be attributed, at least in part, to environmental, societal, and cultural factors (Zola, 1979).

An examination of health of the elderly by culture is timely because of the rapid demographic changes in Canadian society. While the population of individuals 65 years and above is growing quickly, both in absolute numbers and as a proportion of the whole, the Canadian population is also becoming more culturally diverse.

In 1986, elderly people comprised 11% of all Canadians, and this is projected to increase to nearly 22% (6.4 million) by the year 2031, representing a doubling in the proportion of elderly people in 1986 (Statistics Canada, 1991). The same aging trend is observed in other Asian countries like Hong Kong. As the life expectancy of people increases, and birth rate declines, the proportion of people over 65 years in Hong Kong has increased from 2.8% in 1961 to 8.8% in 1991 (Hong Kong Government, 1991). The proportion of people 65 years and older in the general Canadian population, Chinese-Canadians, and Chinese-Taiwanese in 1991 revealed a similar pattern (Statistic Canada, 1992; Directorate-General of Budget, 1992). Elderly people comprised at least 10% of the

total population of 25 years and over, with a higher proportion of females than males (except for Chinese-Taiwanese) (Table 1.1).

The increasing heterogeneity of Canada's population is largely a result of the changing immigration patterns over the last century. Prior to the 1960s, the immigrants were primarily European, but by the late 1980s, substantial numbers came from South Asia, Southeast Asia, Central and South America, Africa, and China (Masi, Mensah and McLeod, 1993). The Asian population (especially Chinese and Southeast Asians) is projected to be the fastest growing among cultural minorities. Chinese will constitute 23% of visible minorities, while other Asians will make up another 19% (Samuel, 1992). Latimer and Lundy (1993) reported that in the top 20 sources of immigration to Canada, Hong Kong ranked first, with China, Vietnam, Korea and Taiwan following closely. These data suggest that Chinese is the most common visible minority in Canada (Figure 1.1). Together with the aging population, and the increasing prevalence and impact of Chinese immigration, the health status and health related behaviors of the Chinese elderly cannot be overlooked.

1.1 Ethnicity and Culture

Although the terms "ethnicity" and "culture" have been used interchangeably in the literature, they reflect different concepts. An ethnic group refers to a group of people who share the same ancestry or history, with distinctive patterns of family life, language, values and social norms (Gordon, 1964). These people come from particular social groups distinguished by race (e.g., African), religion (e.g., Jewish), or national origin (e.g.,

European). They may or may not have the same cultural identity, because culture is an acquired trait (Masi et al., 1993). Culture refers to a way of life that is influenced by the ethnicity, environment, society, and life course experiences (e.g., immigration experience), hence it is acquired throughout the lifespan of an individual. It includes language, concepts, beliefs and values, symbols, structures, institutions, and patterns of behavior. One's culture is not necessary the same as one's ethnic origin (Masi et al., 1993).

In studying the Chinese population, both the concepts of ethnicity and culture are useful. Ethnicity can be used at the sampling selection stage as a selection criterion to identify Chinese individuals by race and name, for example. This would identify an ethnic background rather than citizenship. Focus may then be placed on the cultural aspects of the Chinese elderly, in order to move beyond race and heritage to also include beliefs and behaviors, which are acquired through life experiences. It should also be noted that there are variations within a cultural group as well as between cultural groups. The similarities in health status or behaviors might be more apparent among people of the same socio-economic status and different ethnocultural background than those of the same ethnocultural background but different socio-economic status.

1.2 The Chinese-Canadian Population

The Chinese population in Canada is composed of people mainly from China, Hong Kong and Taiwan. Other Southeast Asian countries like Singapore, Thailand, Malaysia, Vietnam, Cambodia, and Laos also represent the origins of a large number of the Chinese

immigrants. Despite the variety of migration patterns, there are some commonalties in the culture and beliefs of these Chinese people (Lai & Yue, 1990).

The first great influx of Chinese individuals to Canada happened between 1881 and 1884, when 15,000 men were "imported" from China to serve as construction workers on the Canadian Pacific Railway (Lai & Yue, 1990). Only after the II World War, did Canada allow close relatives of Chinese residents to immigrate to the country (Statistics Canada, 1981a). These surviving pioneers who migrated in the late 1800s and early 1900s have now reached an advanced age (Lai & Yue, 1990). Another group of elderly Chinese have come more recently from Hong Kong, China and Taiwan to join their children who are technical workers and professionals. Their role was confined mainly to household and child care duties, in support of their adult children. The third group of Chinese elderly are persons who are financially stable and chose to retire in Canada (Employment and Immigration Canada, 1985), and they are mostly from Hong Kong and Taiwan. Together with the last group of elderly Chinese refugees from Southeast Asian countries, People's Republic of China and Vietnam (Statistics Canada, 1981b), these Chinese elderly vary greatly in their socio-economical, financial, educational and health statuses (Lai and Yue, 1990). Despite belonging to the same ethnic group, these individuals not only present characteristics of cultural patterns and health needs very different from the general Canadian population, but also from each other.

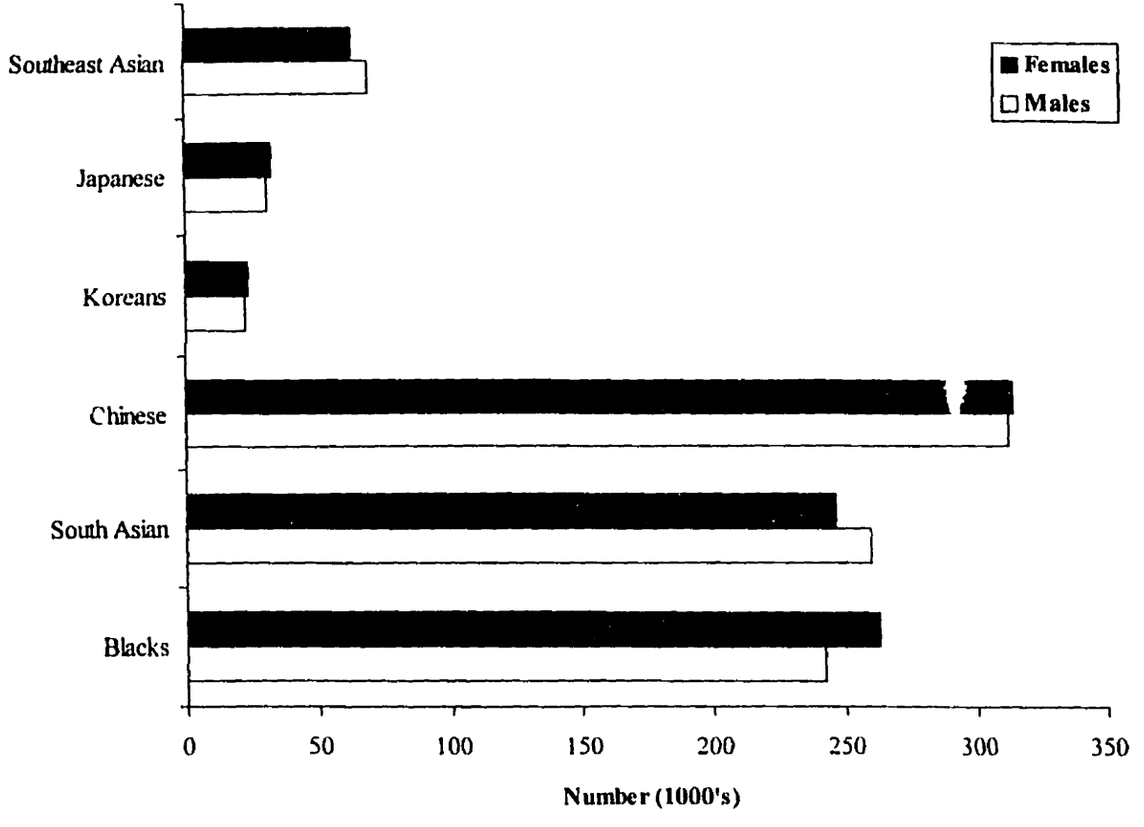
1.3 The General Canadian Population

Canada being a multicultural society is made up of people from diverse cultural backgrounds including Europeans, Africans, Americans, and Asians. The term "Canadian" therefore refers to a heterogeneous group comprised of a mixture of people from various cultural subgroups. When studying a minority culture in Canada (like the Chinese), useful information can be drawn by comparing the Chinese-Canadians with the rest of the population (in this case the Canadian population not including Chinese). This non-Chinese Canadian population is hereafter referred to as the "general Canadian population". For the purpose of this study, the term "Canadian" means residency in Canada and not necessary citizenship.

Table 1.1: Percentage (Frequency, in thousands) Distributions for Age and Gender: Canadians, Chinese-Canadians, and Chinese-Taiwanese in 1991

	Canadians		Chinese-Canadians		Chinese-Taiwanese	
Age	Males % (N) (n=8394)	Females % (N) (n=9180)	Males % (N) (n=189.5)	Females % (N) (n=201.2)	Males % (N) (n=5782)	Females % (N) (n=5494)
25-64	86.5 (7264)	80.0 (7340)	89.5 (169.4)	86.6 (174.3)	87.6 (5067)	88.8 (4880)
65 and over	13.5 (1130)	20.0 (1840)	10.5 (20.1)	13.4 (26.9)	12.4 (715)	11.2 (614)

Figure 1.1: Visible Minorities in Canada



CHAPTER 2. OVERVIEW OF HEALTH AND MEDICATION USE

2.1 Health Variations in the Elderly by Culture

The available information on health statistics of cultural minorities demonstrates some important differences in health status (Ujimoto, 1988). Variations in health are often the result of complex interactions among biological, psychological, social and cultural factors. Health therefore cannot be defined without reference to culture, or in absolute terms because the perception, interpretation, expression, and management of health and illness are culturally based (Danesi, 1993). The experience and manifestation of pain is a good example. In one study, fewer Chinese, Japanese and Filipinos made demands on health care staff, cried or requested medication than did the Caucasians and Hawaiians in response to pain (Lister, 1977). Other factors that are strongly affected by ethnic and cultural background include socio-demographic factors, psychosocial behaviors, disease conditions, biological variables, functional disabilities, inherited disorders, and mortality and morbidity rates. Since migration processes alter cultural experiences, health status of the "stayers" (those who reside in their native country), and "movers" (those who migrated to other countries), of the same cultural group may vary. Waxler-Morrison (1990) stated that ethnic membership often means family structure, medical beliefs, and health status are dissimilar, with those of the Western society. From the stand point of the practitioner, these dissimilarities could lead to ineffective health care related to patient non-compliance. From the point of view of the ethnic patient, the consequences may include prolong illness, alienation, and feelings of being discriminated against.

There are other problems commonly experienced by many of the cultural minority groups, especially the elderly. The first is lack of English fluency, which can make social involvement and health care service utilization frustrating and unrewarding. Second is poverty, which may contribute to inappropriate health care utilization and alternate health choices in order to avoid burdensome medication costs. Last but not least, difficulty in understanding the health provision model and bureaucracy may result in reduced access to health services(Waxler-Morrison, 1990). Therefore, the cultural variations associated with health related issues must be accounted for when studying the elderly population (Ujimoto, 1988).

2.1.1 Mental Health

Information on mental health is essential as it not only reveals the level of need for direct psychological care, but also points to problems which may interfere interventions of physical health problems (Berkanovic, Lubben, Kitanto and Chi, 1994). There are a number of mental health issues associated with aging, and two important areas of consensus are depression and suicide. A common explanation for mood disturbances in later life is that aging is accompanied by role losses through widowhood and retirement, as well as by losses of meaningful relationships through the death of significant others (Markides and Mindel, 1987). Members of the cultural minorities can experience additional stressful events such as migration, discrimination, cultural and language changes, and they may have fewer resources for dealing with stress.

Ujimoto, Nishio, Wong and Lam's (1993) study discussed the "captive immigrants" status of the Chinese and Korean women, which means that they came to Canada because of a felt responsibility towards their family. Their role in the Canadian society is often limited to baby-sitting and house chores. This greatly reduced their opportunity of becoming integrated into the society and compounded their sense of anxiety and depression. Kuo (1984) found higher rates of depression among Asians compared to whites, and Ying (1988) found higher levels of depressive symptoms in the Chinese than whites. Lum (1995) reported that, for elderly 65 to 74 years old, the suicide rate is three times higher for Chinese-American women than white women; in those 75-80 years old, it is seven times higher. The suicide rate of Chinese in San Francisco between 1952 and 1968 was 27.9 per 100,000 population compared with 10.0 for the nation. However, Markides and Mindel (1987) found no evidence suggesting that Asian Americans experience greater rates of mental illness.

Most of the above findings were based on the American experience. The mental health status of the Chinese-Canadian elderly may differ from that of Chinese-Americans because of different experiences in prejudice and discrimination. Methodological difficulties can also account for inconsistent results of depressive disorders, including: difficulty in distinguishing normal versus pathological mood change; lack of common epidemiological diagnostic criteria; variations in case finding and sampling procedures; lack of consideration of cultural patterns of depressive experience; lack of longitudinal studies to rule out cohort effects; and insufficient reliability and validity evidence in the measurements of ethnocultural groups (Marsella, Sartorius, Jablensky and Fenton 1985).

2.1.2 Physical and Functional Health

Studies of physical and functional health problems are important because they provide necessary information on the degree and extent of need for health care (Berkanovic et al., 1994). Epidemiological evidence on health problems showed clear patterns of cross-cultural variations in health explained, at least in part, by underlying biological differences. A higher prevalence of certain genetically inherited traits are present in some cultural groups (e.g., sickle cell anemia in black communities, thalassaemia among Mediterranean's [Masi, 1989]), and Southeast Asian people are more prone to lactose intolerance (Bayless, Rothfeld and Massa, 1975).

Other important biological variations associated with ethnocultural background include differences of body build. Height, weight, and rate of metabolism are different in Southeast Asians than other groups and these affect the pharmacokinetics of medications (Masi, 1989). Therefore, prescribing of medications should not be done without reference to ethnic/cultural background.

Markides and Mindel (1987) reported that almost two-thirds of Chinese elderly residents of Chinatown described their health as poor or fair compared with only about one-third of San Francisco's White elderly. Chinatown residents were also much more likely to report that health limits their activities and they are impaired in their physical mobility. However, a study conducted by Yu, Kim, Liu, and Wong (1993) on congregated housing elderly people in Chicago showed that as ADL is concerned, no Chinese or Korean elderly reported being limited in five or more activities, and very few

reported having three or more limitations. In another study, level of acculturation and the relationships to the five areas of functional impairment: social, and economic resources, mental, and physical health, and activities of daily living were examined among a group of Chinese and Vietnamese in San Diego (Morton, Stanford, Happersett, & Molgaard, 1992). Problems in physical health resulted in the highest prevalence. Over 90% of the subjects registered problems in physical health, with slightly higher levels found among the Chinese (96%), as compared to the Vietnamese (86%). Almost half of both the Chinese and Vietnamese groups registered ADL impairment, with the highest rates among the women. Berkanovic et al., (1994) reported that elderly Chinese in Los Angeles rated their health status as higher, had fewer chronic illnesses, and experienced less mobility limitations than did Chinese in China. Although better in physical health, and similar in IADL abilities, the Chinese in Los Angeles reported more interferences with their daily activities as a result of their health, and they spent more days in bed due to illness than the Chinese in China. It was explained that different perceptions of illness and treatment experiences may account for these variations. These inconsistencies in research findings might be due to methodological differences in sampling, functional definitions and measurements, to name a few.

Different cultural groups may also have dissimilar morbidity rates. Cancers in the ear, nose and throat, nasopharynx, esophagus, liver, and stomach are more prevalent in the Chinese population. Also, hepatitis, tuberculosis, intestinal parasites, and renal stones are more likely to occur in the Chinese (Lai and Yue, 1990). Jenkins and Kagawa-Singer (1994) reported that cancer incidence rate of Chinese, Japanese, and Filipinos, for all

anatomic sites combined, is lower than that of whites. The incidence of breast cancer in Chinese-American women is substantially higher than that in Chinese women in Asia. Similar trends were seen in colon and rectal cancers.

It is evident that cancer and other disease occurrences in immigrants suggest important information on the roles of heredity and environment. Jenkins and Kagawa-Singer (1994) argued that a majority of cancers are believed to be caused, in part, by behavioral, cultural, and dietary factors, suggesting that at least some cancers are preventable through the modification of these factors. Definitive conclusions cannot be made based on these data because of factors such as selective migration, which could affect equivalence of groups, and the comparability of data from the country of origin with that of host, as it may be compromised by differences in medical care, for example.

2.1.3 Service Utilization

A review of service utilization by Damron-Rodriguez, Wallace, and Kington (1994) found that there are clear cultural differences in utilization rates for many health care services in the US. For physician services, the Asian-American elderly visit physicians half as often as white Americans (Liu and Yu, 1985). Boult and Boult (1995) found a strong relationship between minority status and the infrequency of visiting physicians. With hospital stays, Singh and Kinsey (1993) reported that the Philippine elderly spent more days in hospital compared with their white counterparts. Yeo (1993) noted that despite greater evidence of disability, ethnic elderly are significantly under represented in nursing homes compared with whites. For the utilization of community-based services, a trend of

inequitability is also apparent. Significantly fewer elderly Asian-American used social services than Latino and black elderly (Damron-Rodriguez et al., 1994). Among the very few Canadian studies, Majumdar, Browne, and Roberts (1995) reported that although ethnic groups made up 24% of the population in the Hamilton-Wentworth region, only 11.7% of those were receiving formal health care. Emergency room care was one of the few services where Asian/Pacific Americans have a relatively high rate of inappropriate use compared with the general population (Liu and Yu, 1985). Inappropriate emergency room use may be an indicator of problems with access to other types of health care.

For the Chinese-Canadian elderly, it is not certain whether they share the same service utilization experience as other Asians in the US or other "ethnic groups" in Canada. Since the health care provision and insurance systems in the US differ substantially from Canada, it is difficult to make unambiguous comparisons across the two systems. Also, information on service utilization patterns of this cultural group is difficult to extract from the existing data sources because of small sample sizes of specific cultural groups, and the aggregation of data into a convenient generic "ethnic groups" category. With limited data in the Canadian context, researchers cannot distinguish between and compare the various cultural minority groups.

2.1.4 Cultural and Health Beliefs

Concepts about health and illness, as well as of care and treatment, are an integral part of ethnic identity that can be traced to cultural and health beliefs (Hopper, 1993). The Chinese traditional cultural beliefs are rooted from Confucianism, which is still followed, to

varying degrees by many Chinese immigrants. Central to this philosophy is "filial piety", which is the basis of all conducts. Filial piety relates, in simplistic terms, to seniority and respect: a wife obeys her husband, students abide teachers, and individuals submit to authority. The elders in a traditional Chinese family should be the most respected. Essentially, age equals dominance (Chae, 1987). Traditionally, the Chinese value how one's own status appears to others, hence the concept of "social sensitivity" (Louie, 1985). Social sensitivity also means that one's conflicts are not expressed. It is not proper to challenge an expert. Therefore, if a Chinese client has misgivings with a prescribed treatment, he or she may not verbalize these concerns for fear of public conflict. Instead, the individual may simply not follow the treatment (Chae, 1987). Finally, according to Confucianism, the body is not the property of the person inhabiting it, and it must be returned in whole upon death to ensure a proper afterlife. Consequently, Chinese elders who adhere to these beliefs may refuse surgeries or invasive procedures (Chae, 1987). It is important to note that, with more and more western influences, these beliefs may not be retained in whole.

Health beliefs across the globe may be categorized as the followings: those concerning "nature" (natural causation); those related to the individual (the "self"); and those associated with forces beyond ordinary human control (supernatural), such as religion, spirits and magic (Masi, 1988ab). Health beliefs in the Chinese culture relate to a state of equilibrium between individual, society, and the cosmic forces of the universe (Lum, 1995). The Chinese concept of health and illness is based on traditional Chinese medicine, which is divided into three distinct but related types: classical Chinese medicine,

Chinese folk medicine, and medicine in contemporary China (Gould-Martin and Chorswnad, 1981). Classical Chinese medicine is recorded in ancient texts "Huang Ti Nei Ching" (The Emperor's Classic of Internal Medicine), believed to have been written between 2698 and 2598 BC; the "Shang Han Lun" (Treatise on Fevers), and the "Shen Nung Pen Ts'ao Ching" (Shen Nung's Classic Pharmacopoeia), which were believed to be written around the third century BC (Lai and Yue, 1990). The texts state that all of humanity and nature are related to each other in a harmonious balance. Since imbalance brings illness, individuals must adjust themselves wholly to the environment to maintain this balance. Classical Chinese medicine especially emphasized the concepts of "yin" and "yang". Yin represents "the female, negative energy; the force of darkness, coldness, and emptiness". Yang represents "the positive, male energy; the force of light, warmth, and fullness" (Spector, 1979).

Chinese folk medicine originated much of its theory from the classical sources, but the concepts may hold different meanings. "Hot" and "cold" are often substituted for "yang" and "yin", and harmonious balance must be maintained between the two opposing forces. Information about treatment is customarily obtained from newspapers, by word of mouth, and through oral histories, often without the full understanding of the characteristics of the treatment. Religion and magic may also enter into folk medicine. The Chinese may attribute health to good luck or to leading a good life, either in the past or the present (Lai and Yue, 1990).

Chinese medicine in contemporary China draws ideas from classical and folk traditions, and from current medical technologies, both Chinese and Western. Medical

treatment may be offered from either, or both of the treatment approaches. Generally, the forms of treatment offered by traditional Chinese medicine include herbal medicine, acupuncture, acupressure, moxibustion (the burning of small quantities of dried herbs on the body), and chiropractic bone setting (Lai and Yue, 1990).

Lai and Yue (1990) reported that Chinese people usually think of themselves as ill only when symptoms are evident. Since the primary goal is to get rid of these symptoms, the concepts of chronic illness, where symptoms persist for a long time with no absolute cure, and of prevention are not clearly understood and appreciated. Some Chinese may refuse blood tests for fear the loss of blood will weaken the body and because the procedures are too invasive. Also, as immediate results are expected from medications, prolonged Western treatment regimes are often viewed with skepticism, which leads to premature discontinuation of Western prescriptions (Lai and Yue, 1990). Many Asians also believe that Western medicines are too strong and may cause side effects not evident in traditional medicines. They may alter the dosage or treatment period for fear of undesired side effects (Dinh, Ganesan, and Waxler-Morrison, 1990; Lai and Yue, 1990; Okabe, Takahashi, and Richardson, 1990). Individuals raised in the Chinese culture are also reportedly reluctant to use analgesics because of the fear of being out of control, and they believe that pain killers cause sweating and loss of body fluid which induces weakness (Poliakoff, 1993).

2.1.5 Health Seeking and Management Behaviors

Driedger and Chappell (1987) reported that self care, rather than professional care, makes up the majority of personal health care. Most elderly persons, especially those from minority cultural groups, treat themselves before seeking formal services. Even after seeking formal care, many forms of self care continue. Self-medication is a common practice for Chinese and other Asian ethnic groups. Patients may take both Western and traditional Chinese medicine, plus home cures, particularly oils and ointments (Lai and Yue, 1990). Premature discontinuation of taking a medication or altering the dosage may be common in Chinese patients who expect immediate effects or fears undesired side effects. Chappell (1993) also reported that between 75% to 85% of all personal care received by the elderly come from the informal network. Family and friends are the first resort for care to the elderly, and they provide the vast majority of health care. It is the lack of informal support, not ill health, that is the main predictor of long-term institutionalization (Chappell, 1993).

Most Asian ethnic elderly are first-generation immigrants (Lai and Yue, 1990). Unlike the mainstream Canadians who were either born in Canada or long-time residents, the health care needs and medication utilization behaviors of these Chinese elderly should not be based on the experience of the general population. Variations in the Chinese elderly's beliefs and behaviors; physical, mental and functional health all contribute to their dissimilar medication utilization behaviors, therefore, a thorough understanding of patterns and determinants of medication use in elderly, especially the effects of culture on medication use in the Chinese elderly should be understood.

2.2 Medication Utilization Patterns in the Elderly and Variations by Culture

2.2.1 Prevalence of Medication Use

Medication use in the elderly is commonplace. More elderly persons use more prescribed and over-the-counter medications than those in the younger age groups. Chrischilles, Foley, Wallace, Lemke, Semla, Hanlon, Glynn, Ostfeld and Guralnik (1992) indicated that, depending on in which city they lived, 60-68% of elderly men and 68-78% of elderly women used prescription medications, where 52-68% of elderly men and 64-76% of elderly women used over-the-counter (OTC) medications. In addition, the elderly were more likely than younger people to be multiple-medication users (Bergob, 1994). The National Alcohol and Other Medications Survey (NADS) revealed that, as age increases, the prevalence of prescription and OTC medication use increases. It was reported that 19% of elderly men and 27% of elderly women used three or more medications. In contrast, only 13% of men and 15% of women aged 15-34, and 14% of men and 18% of women aged 35-64 reported this level of medication use (Health and Welfare Canada [HWC], 1992). Touminen (1988) compared the number of prescriptions filled per year in community-based populations in Saskatchewan, Ontario and British Columbia. The prescriptions per person was 6.7 for the 35-54 year old group in Saskatchewan in 1976, and 12.8 for the over 65 year old group in the same period; whereas for the elderly in Ontario in 1984-85, number of prescriptions filled were 22.2 per person for the 65 years and older group. Although the time frame of data collection was different, it was still evident that the elderly consume much higher number of medications than the younger

group. Similar trends were found in national surveys from around the world (Nolan and O'Malley, 1988b), which confirmed that there was an increase with age in the proportion of people who take prescription and OTC medications.

2.2.2 Prescription and Over-the-Counter Medication Use

Among the different medications taken by the elderly, medications for cardiac and vascular diseases, analgesics and anti-inflammatory medications, stomach remedies and laxatives, tranquilizers and sleeping pills were the most commonly consumed categories (Guttman, 1978; Health and Welfare Canada, 1992). While there is consensus on medication use increasing with age, it is not easy to pinpoint the precise consumption rate due to deviations in survey techniques, sample populations and definitions of medication categories (McKim and Mishara, 1987).

Although some of the medications taken by the elderly were prescribed by physicians, many were bought OTC without physician consultations (Canada Health Survey, 1981; May, Stewart, Hale and Marks, 1982; McBean-Cochran, 1993; Murray, 1974). When prescription and non-prescription analgesic use was combined, this group of medications ranked first among the elderly, with 49% of men and 53% of women having taken at least one medication of this type (HWC, 1992). May et al. (1982) showed that nearly 30% of all medications taken by a sample of elderly in the United States were not prescribed by a physician. A Canadian survey (Murray, 1974) demonstrated similar findings that over 40% of the medications taken were OTC medications. The use of medications without physician consultation, together with the disproportionately higher use

of medications in the elderly, their changing pharmacokinetics, and polypharmacy can exaggerate the problem of medication mis-use, and drug adverse reactions.

Many studies of adverse drug reactions (excluding elicit medications, suicide and addiction or medication abuse) reported high frequency of detected adverse drug effects. Inciardi, Bride, Russe and Wells (1978) noted that the highest frequency of problems in persons 60 years and older was with OTC medications and some prescription medications. Caranasos, Stewart and Cluff (1974) reported that people over 60 accounted for 31.5% of all hospital admissions, but constituted 41.2% of adverse drug reactions admissions. Hurwitz (1969) also reported that the elderly were over-represented in adverse drug reactions. Health and Welfare Canada's record of adverse drug reactions reported by hospitals and physicians across Canada indicated that people over 65 years had a much higher frequency of adverse drug reactions than what was expected by chance (Health Protection Branch, 1985).

2.2.3 Medication Use in the Chinese Elderly

Some physiological differences in drug metabolism have been reported in Asians. There is sufficient evidence to indicate that beta blocker, psychotropics, and neuroleptics differ in their metabolic effects on certain ethnic groups (Morioka-Douglas and Yeo, 1990). Other studies also documented cross-cultural differences of metabolic response to medications, including sparteine, debrisoquine, mephyenytoin, and caffeine (Inaba, 1987). In many Asians, there is a deficiency of the active form of dehydrogenase, which is an enzyme used in the metabolism of alcohol. In these people, a flushing may appear after

consumption of a small amount of alcohol (Lin, 1991). The acetylation rate, which is the speed of a liver process responsible for the metabolism of many cardiac and psychotropic drugs, are much faster in Asians than in North Americans (Katzung, 1992; Lin, 1991). This fast metabolism is responsible for the more frequent and higher dose of a medication in the Chinese population than other ethnic groups. Additionally, many Chinese are of a smaller stature and have a lower percentage of body fat than average American. This affects the metabolism of fat-soluble medications such as Vitamin K, commonly used to reverse the anticoagulant effect of warfarin (Katzung, 1992; Lin, 1991). Therefore, dosage modification may be necessary in Chinese patients when warfarin is prescribed. The above information clearly demonstrates that an understanding of medication use cannot be assumed without reference to cultural backgrounds.

In the Chinese population, medication use is further complicated by the combined use of Western medicines and traditional Chinese medicines (TCM). This concomitant use is of additional concern because it is known that TCM often have pharmacological effects (Chan, Chan and Critchley, 1992; Homma, Oka, Niitsuma and Itoh, 1993; Lo, Chan, Yeung and Woo., 1992; Sutter and Wang, 1993). Examples of commonly used TCM included Asarum forbesi, or duheng, which is for fever, cough, and intestinal worms; Angelica anomale, or baizhi, which is a common drug for treating menstrual irregularities, infections, and urinary difficulties; Angelica decursive, or gianha, which is an expectorant, laxative, and carminative (O'Hara, 1994). These TCM clearly demonstrated pharmacological effects which may lead to drug-drug interactions with Western

medications, and possibly adverse drug reactions when used inappropriately (Chan, Chan, Tomlinson and Critchley, 1993a).

Documented adverse drug reactions related to TCM include unnecessary hospitalization; falls; confusion; cardiovascular, neurological and gastrointestinal problems; and death (Chan et al., 1992; Chan, et al., 1993a; Chan, Tomlinson and Critchley, 1993b; Gorey, Wahlquist and Boyce, 1992; Izumotani, Ishimura, Tsumura, Goto, Nishizawa and Morii, 1993; Mostefa-Kara, Pauwels, Pines, Biour and Levy, 1992; Tai, But, Young and Lau, 1993; Tomlinson, Chan, Chan and Critchley, 1993). Wong, Wong, and Donnan (1993) found that 31% of those self-medicated on TCM experienced adverse drug reactions. Adverse drug reactions may be more prevalent in the elderly population because medication metabolism decreases with age and elderly people are more sensitive to the effects of medications (Erwin, 1993).

2.2.4 Determinants of Medication Use

Information on the determinants of medication use in minority cultures has rarely been reported in the literature. Most studies have investigated the general population, with a few exceptions that studied "Blacks". Several factors have been shown to be related to increased medication use. With respect to socio-demographic variables, gender, education, marital status, living arrangement, locale and race were determinants of medication use in studies of the general and of the "Black" populations (Brown, Salive, Guralnik, Pahor, Chapman and Blazer, 1995; Chrischilles et al., 1992; Fillenbaum, Hanlon, Corder, Ziquba-Page, Wall and Brock, 1993; Laukkanen, Heikkinen, Kauppinen and Kallinen, 1992;

Simons, Simons, Lauchlan, McCallum, Friedlander & Powell, 1992). As women tend to use medications at a higher rate than men, some believe that gender differences in rate of medication use are due to biological differences, however, many emphasized that social and cultural factors are even more important determinants of gender differences in health and medication use in the elderly (Whittington, Peterson, Dale and Dressel, 1981).

Functional status variables such as disabilities in activity of daily living, functional and physical disabilities are associated with increased medication use (Brown et al., 1995; Chrischilles et al., 1992; Fillenbaum et al., 1993; Guttman, 1978). Hanlon, Landerman, Wall, Horner, Fillenbaum, Dawson, Schmadar, Cohen and Blazer (1996) concluded that the community-based elderly with cognitive impairments were less likely to use any medications than cognitively intact elderly, hence making cognitive impairment a negative predictor of medication use.

In terms of health conditions, Guttman (1978) reported that poor health predicted increase in medication use in the elderly. This finding was substantiated by Skelton (1985) who found that for a healthy population, age did not predict increased medication use. This partially supported Guttman's argument that if a person has no health problems, there should be no increase in medication use with age. Other health variables like severity of disease, number of diseases, perceived poor health and health status were also predictors of medication use in the community based elderly (Mckim, Stones and Kozma, 1990; Chrischilles et al., 1992). Although interactions between health and social-cultural variables in predicting medication use were apparent, most studies neglected to investigate these important interaction effects.

Psychosocial variables including loneliness, life satisfaction, and reported depressive symptoms all associated with medication use (Chrischilles et al., 1992; Mckim et al., 1990; Simons et al., 1992). The NADS results and other studies also shown that stress and lack of family support were strong predictors of increased or multiple medication use (HWC, 1992; Swinkels, Hirdes and Ellis-Hale, 1996).

Different types of formal service utilization such as visits to physicians and hospitalization were also significant determinants of medication use (Fillenbaum et al., 1993; Simons et al., 1992). Brown et al (1995) found that in addition to number of doctors visits and overnight hospitalization, use of a regular doctor was also associated with more antidepressant use.

Health practice variables like smoking and drinking were also predictors of increased medication use (Chrischilles et al., 1992). While most studies agreed on the determinants of medication use, discrepancies do exist as exemplified by McKim et al. (1990) who reported no correlation between age and sex with medication use, and in Stewart, Moore, May, Marks and Hale (1991) who found no gender difference in the rate of increased drug use.

Despite the importance of medication use in the Chinese elderly, as evident in the complexity of their medication use and potential for elevated risks, there has been very little published work on determinants of medication use. Wu's (1996) study on health care and folk medicine use, reported that cultural variables such as beliefs in traditional Chinese medicine and Western medicine, and nativity level (how much a person retained the Chinese culture - degree of "Chineseness") were determinants of folk medicine use.

When Western culture meets traditional ethnic culture, the treatment approach to illness is not constant. In studying medication use of the Chinese elderly, the scenario is further complicated by the expanded choices of Western medicine and TCM, and the coexistence of multiple belief systems. Clearly more methodologically sound research, investigating a multidimensional set of variables, across and within cultures are needed. Moreover, interaction effects between socio-cultural and health variables on medication use should be examined, to allow a more comprehensive understanding of the determinants of medication use.

CHAPTER 3. METHODOLOGICAL ISSUES IN THE STUDY OF HEALTH AND MINORITY CULTURE

Several methodological problems concerning sampling, response rate and community resistance, measurement, and analysis issues were encountered in previous studies of minority cultures. These problems impeded the representiveness, generalizability, and completeness of the information and meaningful cross-cultural comparisons.

3.1 Sampling

One of the major problems in conducting studies in minority cultures is obtaining representative samples. It is well known that identifying a specific cultural group in geographical areas with high proportions of "Whites" is difficult and costly (Jackson and Hatchett, 1986). Because of this impediment, many studies resorted to using samples of convenience. Methods such as using culturally distinct neighborhoods (e.g., Chinatown residence), minority culture organization records (e.g., cultural clubs, churches), or snowballing are common (Mortan et al., 1992; Raskin, Chien and Lin, 1992; Chung and Lin, 1994). Although these methods may avoid the problems of high cost and low hit rate (the probability of correctly identifying the target population), they are often non-representative due to the non-random nature of the sampling approach. Others used random digit dialing or census survey information in order to improve representiveness (Hartge, Cahill and West, 1984; Winkelby, Flora and Kraemer, 1994). These methods are more representative, but they suffer from ineffectiveness and low hit rate, high costs, and being too time consuming. Another major problem with census and statistical records is

the lack of differentiation among cultural groups. Too often, the various populations that compose Asians are not further broken down, and this aggregation of population information makes meaningful comparison unattainable (Browne, Fong and Mokuau, 1994). An illustration is the Canadian Health Survey, which grouped information broadly under English, French, and Others, making cultural comparisons difficult (Driedger and Chappell, 1987). Ujimoto (1994) urged that it is no longer appropriate to classify research samples in these convenient categories. Instead, precise differentiation of the sample is necessary. It is evident that there is wide heterogeneity between minority cultural groups in their form of immigration (forced versus voluntary), recency of immigration, social economic status, nativity, and institutional completeness. Therefore, treating these unique individuals as one group is highly inappropriate.

3.2 Community Resistance and Response Rate

Community resistance is well known to researchers working with cultural minority populations (Bengtson, Grisby, Corry and Hruby, 1977; Burton and Bengtson, 1982; Jackson, Tucker and Bowman, 1982). This resistance to research tends to be significantly greater in cultural minority communities than in "white" communities, yielding low response rate (Bengtson et al., 1977; Wu, 1996). Reasons for this greater resistance included poor reputations of researchers and the research study (Becerra and Shaw, 1984), and perceptions that such research may have negative effects on the community or self (Lillie-Blanton and Hoffman, 1995). To some individuals, they may distrust the intent and

integrity of the researchers and suspect that personal and household information might be misused (Markides, Liang and Jackson, 1990).

To address these problems, researchers have found that the quality of the survey instrument, formal and informal community awareness campaigns, appropriate times to interview, and careful selection of interviewers had proven positive effects on reducing community resistance and increasing response rate (Becerra and Shaw, 1984; Bengtson et al., 1977). Jackson et al. (1982) also stressed that interviewers who represent the credibility of the study, should have the power to convey the perceived objectives of the study. Therefore, careful training of competent and sensitive interviewers can be the most effective way to resolve the problems of community resistance.

3.3 Measurements

A common criticism of most studies of minority groups is that they were performed on only one or two minority cultural groups without equivalent information on the general population, making multicultural comparisons difficult. Driedger and Chappell (1987) stated that the two primary barriers to performing comparative studies between cultural groups are the lack of periodic national surveys, and insufficient data for specific cultural groups. Kramer and Barker (1991) urged that cross-cultural comparisons studies at a national level are needed in order to understand the patterns and effects of culture and their relationship to health.

Hirdes and Carpenter (1997) commented that one of the serious problems in studying health in different populations is the lack of comparable data across studies. Also,

most studies did not report the validity and reliability of their measurements. To a degree, this was due to lack of standardized data collection procedures and definition of health variables. A solution to these data inadequacies and to achieving comparable database is the incorporation of a common assessment instrument with consistent definitions of variables, standardized administration protocol, and cross-cultural applicability in elderly population. Only by implementing this step can valid and reliable comparisons of data within-culture, across-cultures, and internationally be possible.

While the health profile of elderly people varies widely, and their needs are multidimensional. Most studies of health in ethnic minority elders omitted this consideration, and examined only limited health parameters (Markides and Mindel, 1987). In order to address the multidimensional aspects of geriatric health, a comprehensive range of health variables needs to be examined.

3.4 Analysis

Many studies on medication use reported only bivariate analysis and descriptive statistics (Chrischilles et al., 1992; Hershman, Simonoff, Frishman, Paston and Aronson, 1995; Laukkanen et al., 1992; Stewart et al., 1991). For those who performed multivariate analysis in predicting medication use, few examined the statistical interactions between health and social variables (Brown et al., 1995; Fillenbaum et al., 1993; Hanlon et al., 1996; Simons et al., 1992). Use of bivariate analysis limits the studies' ability to identify independent predictors, and it is not possible to examine the relative weight or importance of the predictors.

Kelsey, Thompson and Evans (1987) reported that statistical interactions should be included in the design, analysis and interpretation of research studies. Neglect to consider such interactions may conceal the true relationship between the dependent and independent variables, rendering the findings faulty. In the study of medication use, a statistical interaction exists if the degree of association between an independent variable and medication use (dependent variable) varies according to the level of another independent variable. Unfortunately, statistical interactions in studies of medication use have been severely understudied or under-reported. McKim et al (1990) in their study examined interaction effects between disease severity and health ratings but found no significant effects. Within the research literature to date, very few provided any guideline or direction of specific areas to examine for interactions among health and social variables with medication use. This lack of direction is especially profound in the study of medication use in cultural minority groups.

3.5 Rationale for Using the Minimum Data Set for Home Care (MDS-HC)

The use of comprehensive multidisciplinary assessment instruments with the elderly population has been repeatedly advocated (Kane & Kane, 1981; Katz and Stroud, 1989; Rubenstein, Calkins and Greenfield, 1988; Rubenstein, Wieland and Bernabei, 1995). The Omnibus Budget Reconciliation Act of 1987 mandated that comprehensive, accurate, standardized, and reproducible assessment be implemented for geriatric residents in the evaluation of their functional capability (Morris, Hawes, Brant, Fries, Phillips, Mor, Katz, Murphy, Drugovich and Friedlob, 1990). Comprehensive multidisciplinary assessment is

generally essential in identifying the multidimensional needs of the elderly, for complete clinical planning and service provision, and in evaluating program effectiveness (Morris, Fries, Steel, Ikegami, Bernabei, Carpenter, Gilgen, Hirdes and Topinkova, in press). In addition, the use of standardized assessments is superior to other measurement methods such as self-report, proxy responses and non-standardized direct patient interviews. Standardized assessments provide known measurement characteristics as a result of continuing research on their psychometric properties (Challis, Carpenter and Traske, 1996). Once adequate standardization of assessment protocols is established, it may then be appropriate to compare individuals, programs and countries (Hirdes and Carpenter, 1997).

3.5.1 Comparison with Other Instruments

When trying to identify a widely accepted, effective comprehensive geriatric assessment instrument for non-institutional settings, very few instruments with proven validity and reliability were found the literature (Rubenstein, Siu and Wieland, 1991). In a review of 50 community based assessment instruments in the UK, weaknesses were evident in one or more of these areas: content comprehensiveness, length of administration, standardization of protocols, and evidence of reliability and validity (Challis et al., 1996). A recently proposed multidimensional instrument for long term care services in Ontario - the Common Assessment Instrument (CAI), posed numerous problems in its absence of standardization protocols, missing of decision guidelines, lacking of evidence on reliability

and validity, lengthy and laborious assessment procedures, and inappropriate constructs, to name a few (Hirdes, 1996).

In light of the importance of comprehensive geriatric assessment, and the inadequate quality of many of the existing instruments, international experiences with the Minimum Data Set for Home Care (MDS-HC) offers convincing evidence as a logical choice for comprehensive assessments of elderly in the community settings. The MDS-HC was developed by interRAI, an international team of more than 30 researchers from 16 countries committed to standardized assessment to improve care of the elderly. It is a comprehensive, standardized instrument for evaluating the needs, strengths, and preferences of elderly individuals living in the community, and of home care agencies (Morris et al., in press). The MDS-HC is a second-generation comprehensive geriatric assessment instrument which compliments the Minimum Data Set 2.0 for nursing homes (MDS-2.0) (Morris et al., in press). The MDS 2.0 has been mandated for implementation in all chronic care hospitals throughout Ontario and in several other nations. The MDS-2.0 has demonstrated strong evidence of reliability and validity for its use with chronic care residents (Hawes, Morris, Phillips, Mor, Fries and Nonemaker, 1995; Hawes, Phillips, Mor, Fries and Morris, 1992), and similar findings have been reported for MDS-HC (Morris et al., in press).

3.5.2 Resident Assessment Instrument Home Care (RAI-HC) System

In response to the needs of the increasing proportion of elders living in the community, the Resident Assessment Instrument Home Care (RAI-HC) was developed.

The RAI-HC is a comprehensive and standardized instrument for evaluating the needs, strengths, and preferences of elderly individuals living in the community, and of home care agencies (Morris et al. in press; Hirdes, 1996), and it is compatible with the congressionally mandated Resident Assessment Instrument (RAI) for nursing homes (which includes the MDS - 2.0) in the United States and several countries overseas. The RAI-HC system consists of testing items, definitions, care planning protocols, and training materials which were developed through extensive research and clinical activities. There are originally two main components to the RAI-HC: the Minimum Data Set for Home Care (MDS-HC) and the Client Assessment Protocols (CAPs). Recently, a series of outcome measures have been derived from the MDS-HC.

3.5.2.1 The Minimum Data Set for Home Care (MDS-HC)

The MDS-HC is the screening assessment component of the RAI-HC system. It is a standardized, minimal assessment tool that contains 20 major sections which enables clinical professionals (nurses, social workers, speech-language pathologists, physicians and other therapists) to briefly assess multiple key domains in socio-demographic, function, behavior, health status, social support, environment, service use, and medication use (interRAI, 1996).

The MDS-HC on average takes less than one hour to complete, making it manageable for regular use in home care programs. It also incorporates standardized training procedures using a comprehensive assessor's manual that gives detailed operational definitions for each parameter. Items in MDS-HC are highly comparable with

the reliable and valid MDS-2.0 (30 of 32 items of the key areas in the MDS-HC come from the MDS-2.0, and 47% of the total items in the MDS-HC come from the MDS-2.0) (Hawes et al., 1995; Morris et al., 1996). The new items created for the MDS-HC are for areas that are more commonly present in the community setting (e.g., role of informal supports, the extent of elder abuse, IADL self performance, environmental condition, a variety of health conditions, and a series of service use indicators). The standardized assessment procedures involves the assessor using direct questioning of the elderly person and his or her informal caregivers, observing the elderly in the home environment, and reviewing other health-related documents when available. This type of explicit use of items, instead of using standardized questions, and reliance on multiple source of information closely resembles the MDS-2.0 approach, which yielded high reliability coefficients (average weighted Kappa equals .75) (Hawes et al., 1995; Morris et al., 1996). A copy of the MDS-HC instrument is contained in Appendix A.

3.5.2.2 Client Assessment Protocols (CAPs)

The Client Assessment Protocols (CAPs) are specific combinations of questions/items, known as "triggers", from the MDS-HC instrument. There is a series of 30 problem-oriented CAPs. Each CAP uses the MDS-HC assessment data in a structured manner to identify health risks and concerns to be addressed through further evaluation and care planning.

Examples of groups of CAPs include: functional performance (e.g., ADL/rehabilitation potential, IADLs, institutional risk); sensory performance (e.g.,

communication disorders, visual function); mental health (e.g., alcohol abuse and hazardous drinking, cognition, behavior, depression and anxiety); health problems/syndromes (e.g., cardio-respiratory, dehydration, falls, nutrition, oral health, pain, pressure ulcers); service oversight (e.g., adherence, brittle support system, medication management, psychotropic medications, environmental assessment); and continence (e.g., bowel management, urinary incontinence). These CAPs can also be used as a training manual and reference for clinical professionals (interRAI, 1996).

Once triggered, CAPs lead to a more in-depth review of the causes of the client's identified problems or presenting risks, with the aim of developing an individualized care plan. Psychometric properties of the CAPs and their guidelines have been evaluated with satisfactory results (Morris et al., in press).

3.5.2.3 Outcome Measures

The outcome measures were originally developed for clinical professionals to easily understand the characteristics of a client's state of functioning (Morris, Fries, Mehr, Hawes, Phillips, Mor and Lipsitz, 1994). There are 13 outcome measures derived from specific MDS items and organized into functionally meaningful hierarchical scales. These outcome measures are: activities of daily living (ADL) hierarchy; instrumental activities of daily living (IADL) - capacity measure; IADL - involvement level; stamina; bowel MDS-HC item; bladder MDS-HC item; communication; cognitive performance scale (CPS); behavior symptoms; mood symptoms; alcohol use/abuse; pain symptoms; and pressure ulcer MDS-HC items.

3.5.3 Psychometric Properties

MDS-HC

Inter-rater reliability of the MDS-HC was tested using data from home care clients in five countries: Australia, Canada, the Czech Republic, Japan, and the United States. The samples were not randomly selected, but consisted of agencies willing to participate in the reliability trial (Morris et al, in press). The average weighted Kappa across the item set was .74 for the MDS-HC, with its Kappa values ranging from .49 (for danger of falls) to .91 (for ADL self performance). When assessing reliability coefficient, Kappa values lower than 0.4 indicate poor reliability, values between .40 and .75 are considered adequate; and a value of .75 or higher is evident of excellent reliability (Fleiss, 1981). Validity was also established as exemplified in the ability of the MDS-HC to discriminate between "early-loss" ADLs (bathing and dressing) and "late-loss" ADLs (bed mobility and eating) in community based and institutional individuals (Morris et al., in press).

The MDS-2.0 has been translated into 13 languages (Czech, Danish, Dutch, Finnish, French, German, Icelandic, Italian, Japanese, Norwegian, Spanish, Swedish and Polish), and sources of unreliability or incompatibility were identified and addressed in cross-national comparisons (Fries, Schroll, Hawes, Gilgen, Jonsson, and Park, in press). This makes MDS-2.0 more culturally compatible than any other existing comprehensive geriatric assessment tools. The MDS-HC, being highly comparable with the MDS-2.0, can be expected to share the same cultural compatibility. The MDS-HC is also standardized in

its assessor qualification, assessor training, definitions of parameters, scoring, and the interpretation of data.

Outcome Measures

The 8 outcome measures used for this study demonstrated excellent inter-rater reliability for the summated scale. Weighted Kappa reliability for ADL hierarchy was 0.94, IADL-capacity measure 0.80, IADL-involvement level 0.92, stamina 0.86, communication 0.88, cognitive performance scale 0.91, mood symptoms 0.74, and pain symptoms 0.69 (Morris, Fries, Morris, Phillips and Mor, 1995).

In conclusion, evidence on the psychometric properties of the MDS-HC, its adaptability to multicultural settings, and its superior comprehensiveness, significantly support the international use of this instrument in assessing the health status and health related behaviors of community based elderly in different countries. With trained assessors, the MDS-HC can achieve comprehensive geriatric assessment of community based elderly in a reliable and valid fashion across cultures and countries, and facilitate international data comparison.

CHAPTER 4. STUDY ONE: A Survey of Canadian Retailers Distributing Proprietary Traditional Chinese Medicines: Labelling and Regulation Issues

4.1 Rationale

It is well know that significant numbers of medication used by the elderly are OTC medicines (Canada Health Survey, 1981; May et al., 1982; McBean-Cochran, 1993; Murray, 1974). For the Chinese elderly in Canada, OTC traditional Chinese medicine (TCM) is widely available, therefore their standards and types available should be examined.

TCM has been used for over five thousand years. Different forms of TCM are practiced by "TCM doctors" including herbalists, bone-setters, acupuncturists, and practitioners of qi-gong, tui-na and acupressure (Working Party on Chinese Medicines [WPCM], 1994). In Canada, TCM products can be obtained from Chinese herbal stores, health food stores, Chinese grocery stores or specialty convenience stores. Despite its long history, compared with the much younger field of Western medicine, regulations on practice and sale of TCM are much less advanced in most countries. In Canada, regulations on the sale of TCM products fall within the general regulations on drugs, which are not specific to TCM.

Treatment with TCM is common among Chinese people, and its use is increasing in non-Chinese countries. In Hong Kong, 50-60% of adults use TCM as a complementary form of health care to Western medicines (WPCM, 1994; But and Kan, 1995) and, in many western countries (e.g., USA, Australia), certain TCM practices are licensed and TCM education is formalized (WPCM, 1994). Despite this common use and growing interest,

Canadian regulations on TCM practice and the enforcement of regulations on TCM sale remain inadequate for the protection of public health. Further, TCM products are readily available to the lay-public through numerous sources with easy access.

Understanding that polypharmacy and self-medication are prevalent in the elderly (McBean-Cochran, 1993), especially in the Chinese elderly, a survey of retailers in the Waterloo region selling TCM products was conducted to examine the availability and labelling standard of over-the-counter Proprietary Traditional Chinese Medicines (P-TCM) according to the regulations under the Food and Drugs Act (Tjam, Hirdes, Kan and Chi, 1996). No previous study in this area of research has been found. P-TCM are TCM medicinal products in the ready-made, commercially packaged form versus the ingredient form (commonly referred to as the herbal materials).

The term "adequate labelling" needs to be operationally defined to provide a working standard. First, the Canadian Food and Drugs Act (Health Canada, 1989) defines "drug" as "any substance or mixture of substances manufactured, sold or represented for use in the diagnosis, treatment, mitigation or prevention of a disease, disorder, abnormal physical state, or the symptoms thereof, in man or animal ..." . All of the P-TCM products fall under this definition. Since they may be purchased from retailers with no health professionals available, they also belong to the classification of over-the-counter (OTC) drugs (Health Canada, 1989), and P-TCM should therefore follow all labelling regulations for OTC drugs. If products contain prescription substances, the regulations on prescription drugs must be apply. OTC drugs are intended for self-treatment of minor, self-limiting illnesses that generally do not require the involvement of health professionals, so they must

contain sufficient information to be used properly by a lay person. Further, the text should be explicit and not easily misinterpreted by non-professionals. In Canada, the following labelling information is required on OTC drugs: a) indication for medicinal use, b) dosage, c) route of administration, d) warnings, e) medicinal ingredients, and f) expiration date (Health Canada, 1989).

4.2 Methods

4.2.1 Sampling

Retail outlets carrying P-TCM products in the Waterloo region were identified through Chinese and English telephone directories and through focus groups. A census of retailers of P-TCM products in the Waterloo region included 8 Chinese convenience stores and 8 health food stores. A letter of invitation to participate was sent to each store, and consent was obtained through a follow up phone call and signed document.

4.2.2 Development of Survey Instrument

Two sets of survey instruments were developed: 1) a questionnaire for store owner interview; and 2) a complete inventory form for P-TCM. The content of the store owner's questionnaire was developed based on questions needed to be answered by the study. Following focus group verification and modification of the questionnaire, a pilot study was carried out to assess the questionnaire's ease of use, content completeness, and acceptability to store owners prior to its implementation.

The inventory form for P-TCM was designed to record all pertinent information on the label of the P-TCM. Labelling information in both Chinese and English languages were

recorded in a standard format including product name; brand name: unit price; listed ingredients; medicinal purposes; dosage; route of administration; warnings; and expiration date. This information was used to assess the labelling standard according to the Canadian Food and Drugs Act (Health Canada, 1989).

4.3.3 Data Collection

Store owners were interviewed prior to a complete inventory of the P-TCM products. Each different type of P-TCM products was purchased and all information on the outside and inside labels were recorded using the standard inventory form.

4.3.4 Analysis

Descriptive statistics for the labelling information was performed. Percentage distribution, and Chi-square analysis to assess statistical differences were conducted for categorical data.

4.4 Results

Among the 8 Chinese convenience stores and 8 health food stores, only one of each stores refused to participate, resulting a response rate of 87.5%. The inventory of P-TCM yielded 114 different drugs from convenience stores, and 3 from health food stores. None of the stores had a qualified TCM personnel monitoring the sales of the P-TCM. Most store owners, with no TCM training, fulfilled the role as the provider of medication information to customers.

The cost of P-TCM were relatively inexpensive compared with western drugs (over 78% of them were less than 5 dollars). Figure 4.1 shows that a wide variety of medicinal indications were declared, ranging from mild conditions (e.g., coughs) to more serious ones (e.g., mental problems, diabetes). Moreover, many of the P-TCM violated the English and French language requirement because descriptions were provided in Chinese only, and some medicinal indications were more likely to be declared in Chinese language only than others (e.g., anti-aging agents, aphrodisiacs, agents for hormonal problems, and alcohol related problems). Table 4.1 shows that the number of medicinal indications claimed ranged from 1 to 13 by the P-TCM manufacturers. Nearly 40% of P-TCM declared 5 or more medicinal indications, and claiming 3 medicinal indications was the modal value. Many P-TCM used TCM terminologies reflecting concepts that are specific to the philosophy and practice of TCM. The concepts are not commonly used in Western medicine, making precise translation to English difficult. Approximately 57% of the P-TCM used TCM terminologies in English and/or Chinese.

The P-TCM were analyzed according to labelling regulations set out by the Food and Drugs Act. No P-TCM complied fully with any one of the 6 labelling requirements (a-f) in English. Declaration of route of administration was complied with by the largest percentage of P-TCM (75.3%), followed by medicinal indications (74.8%), ingredients (73.8%), and dosage (71.0%). Labelling of warnings and expiration date were most insufficient (22.4 and 12.1%, respectively) (Table 4.2). As few as 3.7% of P-TCM satisfied the complete set of labelling regulations (Figure 4.2), and most (53.7%) satisfied only four of the requirements.

Under Section III of the Food and Drugs Act, any advertisement to the general public of a drug as a treatment, prevention, or cure for a disease listed in Schedule A (Table 4.3) is prohibited. Table 4.4 shows that 49.5% of the P-TCM collected violated this regulation. Of the 45 prohibited Schedule A diseases, 19 were claimed by these P-TCM to be preventive or curative by these P-TCM.

In order to estimate the potential risk of adverse reactions among the P-TCM studied, published pharmacoepidemiological reports were surveyed to identify P-TCM and associated ingredients with documented cases of adverse reactions (see Chan, Tomlinson and Critchley, 1993b; Izumotani et al., 1993). These adverse reactions could be a result of the product effects, and/ or of mis-use. For example, "zheng gu shui" is known to be associated with contact dermatitis among some patients (But and Kan, 1995). On this basis, approximately 25% of the P-TCM had adverse drug reactions reported, or contained ingredients that may lead to adverse reactions in some individuals. It should be emphasized that this approach would yield a much higher percentage for western pharmaceuticals with adverse reactions because regulatory review and epidemiological scrutiny in post-marketing surveillance has been much more intense. Of the 14 types of adverse reactions reported for the P-TCM studied, the most common were gastrointestinal (15.9%), neurological (14.0%), renal (13.1%) allergic (7.5%), and central nervous system side effects (5.6%) (Figure 4.3). A cross-tabulation showed there was no association between reported adverse drug reactions and warning statements on the P-TCM labels. Among P-TCM with known adverse reactions, only 46% provided warning statements compared with 52% among those without reported adverse reactions.

Although P-TCM typically contains natural, herbal ingredients, 30% of them contained allopathic or conventional Western medicines. The most common Western medicines listed on the label were rubefacients (13%), analgesics (6.5%) and stimulants (4.6%). There are also reports of Western medicines found in P-TCM in scientific literature including analgesics, anthelmintics, anti-inflammatories, benzodiazepines, diuretics, hormones, laxatives, and steroids (But and Kan, 1995; Goldman, 1991). Some of the P-TCM also contained Western medicines that are highly restricted (e.g., phenylbutazone [Ontario College of Pharmacists, 1991]), and banned P-TCM (e.g., Chuifong Toukuwan [Goldman, 1991]) was also found in 25% of the stores.

4.5 Discussion

Most OTC Western drugs usually limit medicinal indications to one or two symptomatic, minor and self-limiting illnesses. In contrast, P-TCM made claims for a wide range of multiple symptoms, illnesses and diseases at different levels of severity. This could lead to possibly at least two problems for public health. First, the public could view P-TCM as illegitimate medications if they feel that the claims are unrealistic, and this could discourage the appropriate use of some effective TCM drugs. Second, customers might believe unsubstantiated claims, and this could pose important health risks.

A number of concerns arise with respect to language use on P-TCM labels. For example, it is not clear whether the apparent selective use of Chinese-only claims for specific conditions (anti-aging agents, aphrodisiacs, hormonal problems, and alcohol related problems) was a deliberate strategy to target the Chinese only or whether it was

simply a chance variation. The use of TCM terminologies creates a barrier to persons unfamiliar with TCM philosophy in understanding the medical context of the P-TCM. Their low cost combined with inappropriate translation may propagate mis-perception of P-TCM as either ineffective or harmless.

The lack of adherence to government labelling regulations is of particular concern. Insufficient labelling is probably the result, at least in part, of lack of enforcement of the OTC drug regulations for P-TCM. In Canada, P-TCM customarily have been viewed as a non-drug or mild health supplements by the public and many health professionals. This situation is compounded by the large percentage of P-TCM claimed to have medicinal effects on the prohibited Schedule A diseases, and the lack of warning statements on P-TCM. The clear violation of the Schedule A section of the Act should be of concern to Canadian regulatory bodies. It is also problematic that there was no difference in the percentage of P-TCM with or without warning statements based on known adverse drug reactions. The public must be cautioned at least through warning statements on the drug labels to avoid unnecessary health risks. For the protection of public health, regulatory bodies must treat P-TCM seriously and apply the labelling regulations for Western medicines to P-TCM, with additional considerations of cultural and language differences.

In conclusion, this study revealed three levels of non-compliance to Canadian Food and Drugs Acts of the P-TCM products. The most serious non-compliance is banned P-TCM products being available on the market. This needs to be dealt with immediately to avoid serious public health hazards. Second, a number of P-TCM products contain Western medicines. These products should be identified clearly, and information on their

pharmacotheraputic properties should be made available to both health professionals and the public. Last, but not least, many P-TCM products contain insufficient labelling information. Appropriate efforts should be made in order to improve the labelling standard of these products. It is strongly recommended that, when formulating action plans on the enforcement of the regulations, researchers in the TCM field and representatives of the Chinese community be involved to ensure a smooth implementation of the process and to avoid public resistance. While there is a clear case of some urgency to act, any regulatory and enforcement initiatives must occur in partnership with the cultural community affected. In Hong Kong, the Working Party on Chinese Medicine has made concrete suggestions on the registration of practitioners, licensing of dispensers and manufacturers, training, and public education (WPCM, 1994). In conjunction with existing Canadian drug regulations, the Hong Kong policies being formulated for TCM should be considered in defining a working framework for Canada.

Table 4.1: Percentage (Frequency) Distributions of Medicinal Indications Declared by the Proprietary TCM

Number of Medicinal Indications	%	(N)
1	9.3	(10)
2	15.9	(17)
3	23.4	(25)
4	15.0	(16)
5	8.4	(9)
6	11.2	(12)
7	6.5	(7)
8	5.6	(6)
10	1.9	(2)
12	0.9	(1)
13	1.9	(2)

Table 4.2: Percentage (Frequency) Distributions for the Proprietary TCM Satisfying the Labelling Regulations Requirement for Over-the-Counter Medications

Labelling Requirements	% (N)
Indication for Medicinal Use	74.8 (85)
Dosage	71.0 (81)
Route of Administration	75.3 (86)
Warnings	22.4 (26)
Medicinal Ingredients	73.8 (84)
Expiration Date	12.1 (14)

Table 4.3: Schedule A Diseases Under Section III of the Food and Drugs Act

Alcoholism	Hypertension
Alopecia	Hypotension
Anxiety state	Impetigo
Appendicitis	Kidney disease
Arteriosclerosis	Leukaemia
Arthritis	Liver disease
Asthma	Nausea and vomiting of pregnancy
Bladder disease	Obesity
Cancer	Pleurisy
Convulsions	Pneumonia
Depression	Poliomyelitis
Diabetes	Rheumatic fever
Disease of the prostate	Septicemia
Disorder of menstrual flow	Sexual impotence
Dysentery	Tetanus
Edematous state	Thrombotic and Embolic disorders
Epilepsy	Thyroid disease
Gall Bladder disease	Tuberculosis
Gangrene	Tumour
Glaucoma	Ulcer of the Gastrointestinal tract
Gout	Vaginitis
Heart disease	Venereal disease
Hernia	

Table 4.4: Percentage (Frequency) Distributions for the Proprietary TCM that Claimed Indications for Schedule A Diseases

Schedule A Disease	%	(N)
Any Schedule A Disease	49.5	(53)
Arthritis	17.7	(19)
Anxiety state	5.6	(6)
Disorder of menstrual flow	5.6	(6)
Liver disease	4.7	(5)
Depression	4.6	(5)
Ulcer	4.6	(5)
Hypertension	3.7	(4)
Sexual impotence	3.7	(4)
Diabetes	2.8	(3)
Edematous state	2.8	(3)
Arteriosclerosis	1.9	(2)
Asthma	1.9	(2)
Heart disease	1.9	(2)
Alopecia	1.8	(2)
Dysentery	1.8	(2)
Alcoholism	0.9	(1)
Convulsions	0.9	(1)
Glaucoma	0.9	(1)
Tumor	0.9	(1)

Figure 4.1: Percentage of Proprietary TCM Claiming Specific Medicinal Indications by Language on Label

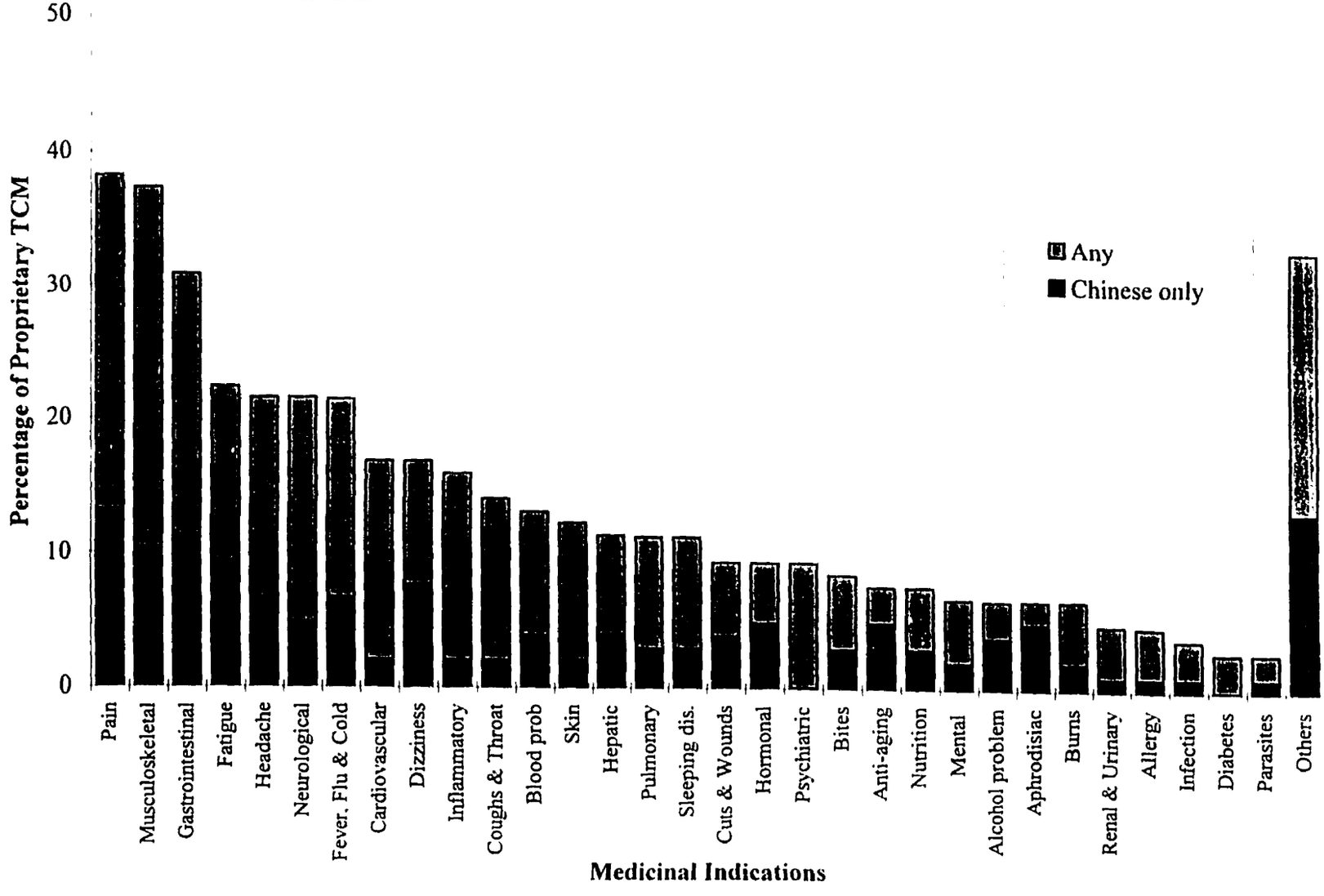


Figure 4.2: Percentage of Proprietary TCM Satisfying Labeling Regulations in English

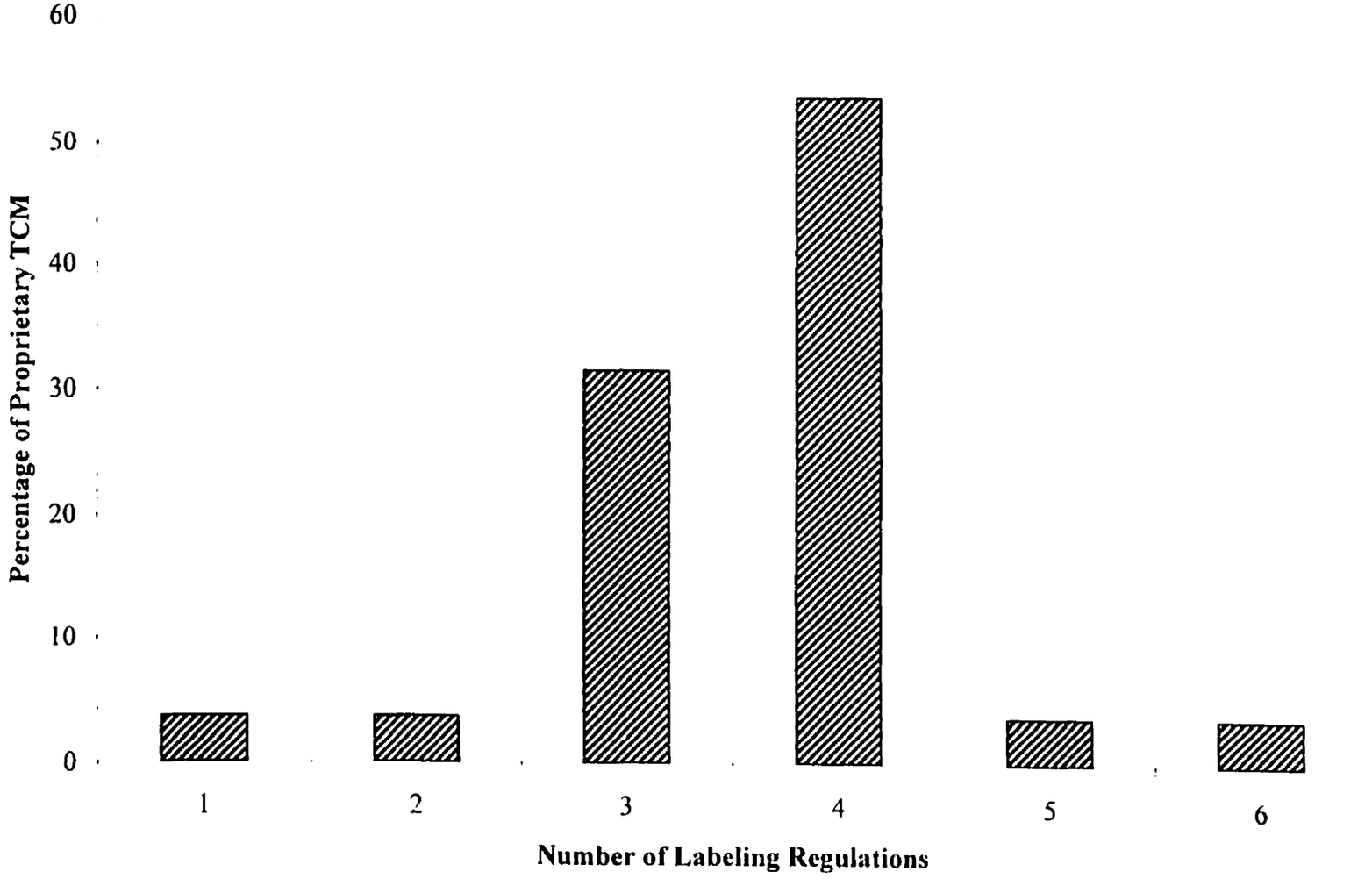


Figure 4.3: Adverse Drug Reactions Reported for the Proprietary TCM

CHAPTER 5. STUDY TWO: Identification of the Chinese Population Using a Phonologically Based Surname Search Method

5.1 Rationale

The frequent use of non-representative samples (e.g., culturally distinct neighborhoods, minority culture organization records, snowballing), and time consuming, low hit rate (e.g., random digit dialing, census survey information) methods in sampling minority culture is of concern (Chung and Lin, 1994; Hartge et al., 1984; Mortan et al., 1992; Raskin et al., 1992; Winkelby et al., 1994). When studying the Chinese population, a theoretically based, low cost, high hit rate, and representative method of utilizing a phonological method to distinguish Chinese surnames from non-Chinese ones can be employed (Tjam, Hirdes and Roehrig, 1996).

The Chinese language's phonological rules dictate that Chinese words are all monosyllabic (Wong, 1995). Chinese surnames are therefore also monosyllabic (except for a few two-word compound surnames which are known and easily identifiable). There are distinctive phonological rules and patterns within certain Chinese dialects. In comparison with the English phonetics, Chinese surnames, transcribed based primarily on the pronunciation of the Cantonese or Mandarin dialects (the two most common Chinese dialects), can only begin with a vowel sound (e.g., /a, e, i, o/), or one of the following consonant sounds: /b, p, m, f, d, t, n, l, g, k, h, z, c, s, j, q, x, zh, ch, sh, y, w, r, ng, tz/. Further, Chinese surnames can only end with a vowel sound (e.g., /a, e, i, o, u, ou, ow, y, eu/), or one of the following consonant sounds: /m, n, ng, p, t, k/ (inclusion criteria) (Table 5.1) (Wong, 1995; Avery and Ehrlich, 1987). Based on these phonological patterns, any

words/surnames that are multisyllabic (e.g., Hirdes, Curtis, Lubben); begin with a consonant cluster sound (e.g., Stones, Green); begin with a sound other than the given consonants (e.g., Thatcher, Venn,); or end with a fricative, africate or liquid sound (e.g., Forbes, Goetz, Rose, Poole,) (exclusion criteria) (Table 5.2), will not qualify for possible Chinese surnames. The same inclusion and exclusion criteria can be applied to the first and second name of a person as an additional verification technique. As there are only a few hundred Chinese surnames (Anonymous, 1973), the surname identification method based phonological rules can be a valid and efficient technique in distinguishing Chinese surnames from the non-Chinese surnames. A simple and efficient three-step flowchart (Figure 5.1) summarizes the above method.

5.3 Methods

5.3.1 Sampling

The target population was telephone owners with a Chinese surname residing in the Waterloo region. In order to sample possible Chinese surnames, a complete list of names of telephone owners in the Waterloo region was obtained using a CD-ROM telephone directory. This method provided a near census population of all possible surnames. Chinese surnames were selected based on the exclusion and inclusion criteria, yielding a list of possible Chinese surnames.

5.3.1 Data Collection

Data collection in this study refers to the validation process of the possible Chinese surnames. Three validation methods were used to verify if the possible surnames selected

based on the inclusion or exclusion criteria were true Chinese surnames. The first method was the use of an expert panel. A group of 8 Chinese individuals from different dialect backgrounds (Cantonese, Mandarin, Putonghua, Shanghainese, Toisan, Hokien, and Chaozhou) examined the list of possible surnames independently, and categorized them as Chinese surname or not. The second method was the use of external reference source. A list of Chinese surnames previously verified were used to compare against the possible surnames (Choi, Hanley, Holowaty and Dale, 1993). Those surnames that corresponded with the previously verified surname list was categorized as true Chinese surnames. Finally, validation by telephoning individuals with surnames that were not verified with the above two methods were done. A simple question of "is your last name a Chinese last name" was asked to validate the possible Chinese surnames. The combined result of these three validation methods provided an overall percentage hit rate for the list of possible Chinese surnames.

5.3.1 Analysis

Descriptive analysis was employed to determine the percentage hit rate of the phonological method.

5.4 Results

A total of 266 possible Chinese surnames were generated using the inclusion and exclusion criteria of the phonologically based surname search method. Consensus was reached from the expert panel which verified 206 surnames as true Chinese surnames.

When compared with the external reference source, 153 of the possible Chinese surnames were verified as true Chinese surnames. These 153 surnames were part of the expert panel list. After using the above two methods, there were 60 surnames left un-verified. Direct telephoning was done yielding a total of 23 true Chinese surnames. After combining the number of total verified surnames from these three methods, an overall hit rate of 86.1% (229/266) of true Chinese surnames was achieved.

5.5 Discussion

The overall hit rate 86.1% from the combined method indicated that the phonologically based surname search method is a valid technique for identifying individuals with a Chinese surname from the general population. Using the inclusion and exclusion criteria and the three step flow chart, both Chinese and non-Chinese speaking individuals can utilize this method with ease, and the searching process is quick and low cost.

Certain limitations existed with this method. A few surnames qualified under the phonological method as Chinese surnames, however, were also common to other cultures (e.g., Lee, Kim, King, Bui). This could lead to false positives, hence over estimation. Names that are exceptions and should not be considered for selection with this method include common Western names (e.g., Bean, Cook, Guy), and common other Asian Names (e.g., Bui, Duong, Tieo) which are obviously not Chinese surnames. Also, phonetics of other dialects (e.g., Fukienese, Toisanese, Shanghainese, Vietnamese) should be included in order to achieve a comprehensive list of phonological rules and sounds in Chinese. Also, false negatives might occur if the Chinese individual changed his/her surname as a result of

cross-cultural marriages; or the Chinese individual was from a country (e.g., Vietnam, Indonesia) where a non-standard form of surname transcription method was used. These numbers, however, are believed to be negligible in the elderly Chinese population. Finally, individuals who are telephone non-users or have unlisted telephone numbers would not be identified using this method.

For future research, a wider scope of search regions may be used to achieve a greater coverage. Other major Chinese dialects should also be included to generate a complete list of phonological rules and patterns. Also, more detail statistical analysis such as sensitivity, specificity, positive/negative predictive values, etc. may be employed to provide more sophisticated statistical results. The phonologically based method developed to date, is nonetheless, believed to be a practical, user friendly, valid, effective and efficient method of identifying the Chinese population from a general English speaking population.

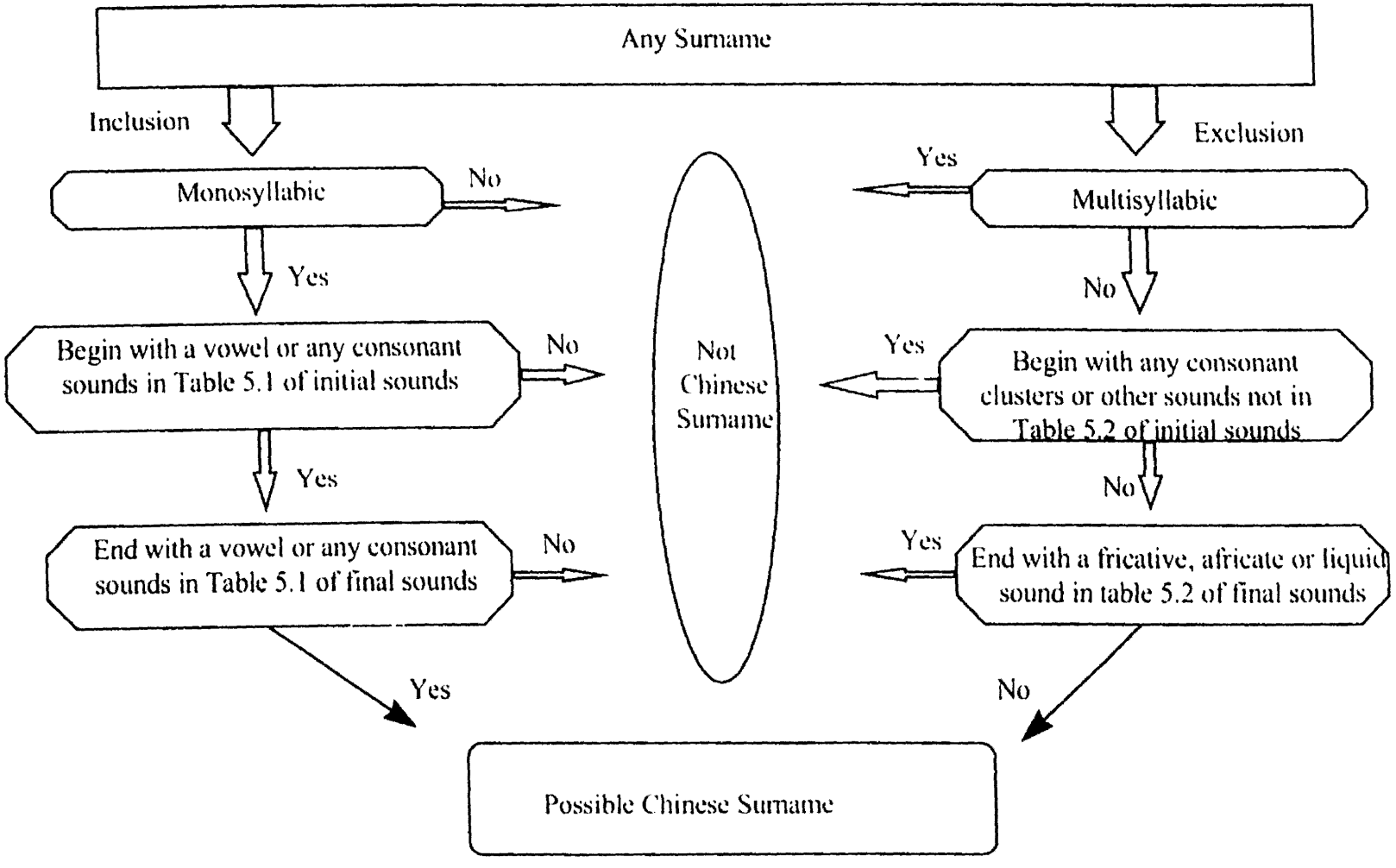
Table 5.1: Inclusion Criteria for Chinese Surnames based on the Cantonese and Mandarin/ Putonghua Phonological Rules

Phonological Structure	Inclusion Criteria
Number of Syllables	**one syllable**
Initial Sounds	**any vowels**
	consonant sounds /b, p, m, f, d, t, n, l, g, k, h, z, c, s, j, q, x, zh, ch, sh, y, w, r, ng, tz, ts, sz/
Final Sounds	**any vowels**
	consonant sounds /m, n, ng, p, t, k/

Table 5.2: Exclusion Criteria for Chinese Surnames based on the Cantonese and Mandarin/ Putonghua Phonological Rules

Phonological Structure	Exclusion Criteria
Number of Syllables	**multisyllabic**
Initial Sounds	**consonant cluster sounds** /bl, br, pl, pr, dr, dw, tr, gl, gr, kl, kr, sl, sp, st, sw, str, cl, cr, fl, fr, wr/
	fricative or africate sounds /th, v/
Final Sounds	**fricative, africate or liquid sounds** /s, f, v, sh, ch, dz, th, l, r/

Figure 5.1: Flow Chart for Identifying Chinese Surnames Based on the Cantonese and Mandarin/Putonghua Phonological Rules



CHAPTER 6. STUDY THREE: Cultural Variations in Health Status and Use of Western Medicine and Traditional Chinese Medicine Among the Community-Based Elderly

6.1 Rationale

It is evident in the literature that there are variations in health beliefs and behaviors; physical, mental and functional health; social support; and service utilization across cultures. These variations subsequently contributed to the diversity in medication use. Medication use is of concern in the general population of older persons because of the high prevalence of polypharmacy and adverse drug reactions. The high cost of medications and consequences of adverse drug reactions related to increased medication use and polypharmacy are also major concerns for health care providers and policy makers (Hershman et al., 1995). Medication use in the Chinese elderly is further complicated by the expanded choices of Western and traditional Chinese medicines, the coexistence of multiple belief system, and variations in health behaviors and status. Together with the low cost and poor labelling standards of TCM products available in Canada (see Chapter 4), and the lack of support from health care providers due to unfamiliarity with the Chinese culture and TCM, the risks of polypharmacy, combined medication use and adverse drug reactions are further magnified for the Chinese elderly. To gain a better knowledge of health and medication use in the elderly in order to prevent unnecessary risks of medication use, it is important to understand the variations in health and medication use behaviors of the Chinese-Canadian and the rest of the Canadian elderly populations.

Due to methodological limitations in sampling (e.g., lack of representiveness of the population, aggregation of ethnic information); low response rate and community

resistance; measurements (e.g., lack of standardized protocol, inconsistent definition of health variables, assessment instruments being not comprehensive and multidimensional); and analysis (e.g., mostly bivariate analysis, lack of consideration of statistical interactions), most available literature in health and medication use restricted meaningful comparisons across cultures and failed to provide in-depth understanding between medication use and health. Using the theoretically based sampling method (based on the phonological method), the standardized comprehensive geriatric assessment instrument (MDS-HC), and by implementing strategies to reduce community resistance, the proposed study examined the multidimensional aspects of health, and the determinants of medication use in the frail Chinese-Canadian and Canadian elderly populations. Health status variables were also compared with the general Canadian elderly and the Chinese elderly in Hong Kong.

6.2 Objectives

In examining the determinants of medication use, various demographic (e.g., age, sex), physiological (e.g., health status, number of diseases), psychological (e.g., depression, loneliness), social (e.g., living arrangement), and health service utilization (e.g., formal service use, hospitalization) factors have been reported to be associated with medication use (see McKim et al., 1990; Simons et al., 1992). For this reason, a wide range of health related variables were studied and examined to explain variations in health medication use.

The primary objectives of this study were:

1) to examine the determinants of medication use, both Western and TCM, in the Chinese-Canadian elderly population in the Kitchener/Waterloo area;

2) to examine the determinants of Western medication use in the Canadian elderly population receiving Red-Cross services (Red-Cross Canadians) in Ontario;

3) to compare the determinants of medication use between the Chinese-Canadian and the Red-Cross Canadian samples (sub-cultural comparisons).

The secondary objective was:

1) to explore variations in health among the Chinese-Canadian and the Red-Cross Canadian elderly people (sub-cultural comparisons); the Chinese-Canadian and the Chinese-Hong Kong elderly people ("movers" and "stayers" comparisons, immigration effect); and the Red-Cross Canadian and the Chinese-Hong Kong elderly people (cross-cultural comparisons). Comparisons are also performed between the Red-Cross Canadians and the general Canadian population to examine heterogeneity of the samples;

6.3 Methods

6.3.1 Sampling

There were four sets of data used in this study. Two sets were through primary data collection, namely the Chinese-Canadian Kitchener/Waterloo study and the Red-Cross Canadian study. These two studies were cross-sectionally designed, and the target population was cohorts of frail elderly people (predominantly 65 years and older, with the exception of a few younger frail individuals 60 years and older). The other two data sources were secondary data sets, one from the Community Geriatric Assessment Team (CGAT) in Hong Kong, and another from the National Health Population Survey (NPHS). The CGAT is a cross-sectionally designed cohort study of caseload, and the NPHS is a cross-sectionally designed survey of the general Canadian population.

6.3.1.1 Primary Data Collection

6.3.1.1.1 The Kitchener/Waterloo Study

The study population was comprised of community-based frail Chinese-Canadian elderly residing in the Kitchener/Waterloo area in Ontario. Two sampling approaches were used. First, elderly Chinese patients of local Chinese physicians and of the Waterloo Home Care Program were selected. Second, elderly members of the Central Ontario Chinese Cultural Centre (COCCC) and the Chinese Alliance Church were identified.

As frailties is often translated to receiving medical care in the industrialized society, using physician patient lists and the Home Care Program is a reasonable method of identifying the frail elderly. Patients are more likely to see physicians who are similar to

them (McKim and Mishara, 1987), so the Chinese elderly will probably be more inclined to visit Chinese physicians who share their language, culture and beliefs background.

The names of Chinese physicians obtained from the telephone directory, and Chinese patients of the physicians and the Home Care Program all used the surname search method based on phonological rules (see Chapter 5). In order to achieve a complete coverage of the target population, member lists of the COCCC and the Chinese Alliance Church were also used. The COCCC, with one of its mandates to serve the elderly, have attracted nearly 2,000 members. This membership number approximated the census estimated number of 1,900 Chinese in the Kitchener/Waterloo area (Statistics Canada, 1992), therefore yielding a relatively representative coverage of the Chinese population. The Church list was also used to complete the identification of Chinese elderly in the area. Based on the 1991 Census (Statistics Canada, 1992) of 1,900 Chinese in the Kitchener/Waterloo area, and given that 7.5% of the general Chinese population in Canada is elderly (Statistics Canada, 1992), an expected 143 elderly Chinese people are needed in Kitchener/ Waterloo area for the study to be a census.

A total of 176 potential Chinese-Canadian elderly individuals were initially identified. Seventeen of them were non-Chinese (mostly Southeast Asians and Koreans), leaving a total of 159 Chinese-Canadian elderly in this area, which approximated the census estimate of 143 elderly. Excluding 57 ineligible individuals (due to migration, deceased, and wrong address or phone number), the study achieved a 89.1% response rate yielding 106 participants.

The Chinese elderly who were unable to be identified through any of these four sampling frames were probably individuals who have not seen a Chinese physician or received Home Care services, have not participated in any Chinese activities, and have not attended the Chinese Church. This is likely a negligible number as most Chinese elderly will have close relations with the Chinese culture. Any of the unidentified individuals were probably second generation Chinese-Canadian elderly, or those who have been residents for an extended length of time, making them more similar to the general Canadians than the Chinese.

The methodological issue of community resistance and response rate were addressed by implementing prudent, sensible and thorough procedures at the information dissemination, public awareness, and assessor training stages to ensure maximal community understanding and participation. The first step in building a positive image of the study was to gain full support from local organizations and agencies that are in close relationship with the Chinese elderly. Partnerships were forged with a local Chinese organization, the Central Ontario Chinese Cultural Center (COCCC), the Waterloo Regional Home Care Program, the Chinese Alliance Church, local Chinese physicians, and the University of Waterloo. The COCCC is a community-based voluntary association linking Chinese-Canadians of all ages in the Waterloo Region. Its primary mandate is to organize and facilitate cultural events and to disseminate information of interest to the local Chinese-Canadian community. The COCCC is registered as a charitable organization and has a membership of approximately 2,000 individuals. The Waterloo Regional Home Care Program provides a variety of community-based services to adults with disabilities and frail

elderly individuals across the Waterloo Region. This agency offers a holistic perspective in service delivery and it includes polypharmacy as one of the major problems targeted by its service providers. The Chinese Alliance Church is the only local Chinese church providing both Chinese and English religious services. It also has a well established elders' club, the Golden Club, which organizes events and workshops specific to the needs of local Chinese elderly. The local Chinese physicians are primary medical care givers of the Chinese elderly population, also participated and endorsed the study. With complete support from these reputable local agencies and personnel, the trustworthy and scientific image of the research study was firmly established.

To further convey the research integrity and reputation, a well-known academic institution in Chinese society, the University of Hong Kong in Hong Kong was involved. Being highly reputable to the Chinese population, this university's involvement greatly facilitated the trust from the public in the quality of this research. Further, the professional and cultural background of the principal investigator is important in establishing rapport with the community. Being an allied health professional and an active member of the Chinese community (volunteer radio disc-jockey of the Chinese Hour), the principal investigator is familiar to the community through her work in organizing health seminars, hosting charitable events and large-scale community functions. As well, she is fluent in the two most common Chinese dialects (Cantonese and Putonghua), and English. These credentials have contributed favorably to the acceptance of the research by the community.

Community awareness campaigns (Lefebvre and Flora, 1988) were also organized to reduce community resistance and maximize participation. Monthly information letters

were sent to all members of the COCCC to report the progress of the study. Public announcements were made at major community events to familiarize the community of the study. Also, radio broadcasting of the nature and objectives of the study were done regularly. Further, physicians sent out information package to all Chinese elderly patients to introduce the study. All these efforts are believed to have highly increased public awareness and understanding, hence encouraged participation. Assessor selection and training will be discussed in the methods section.

6.3.1.1.2 The Red-Cross Study

The target population was comprised of clients of the Red-Cross Homemaker program residing in Ontario. The Canadian Red Cross Homemaker Program is a not-for-profit private service offered to the frail community-based elderly and adults with disabilities. Services are generally provided through contractual arrangements with local Home Care programs. Although a substantial proportion of Red Cross Homemaker clients are also Home Care clients, some are private clients served exclusively by Red Cross. The division of service provision is typically that Home Care provides clinical services, nursing care and therapies, whereas the Red Cross Homemaker program provides support for activities of daily living (e.g., personal care) and instrumental activities of daily living (e.g., house cleaning). For the present study, all respondents were joint clients of the Home Care and Red Cross Homemaker programs.

Sampling was based on a stratified random sample of clients of the Red Cross Homemaker in 6 Ontario cities: Windsor, Owen Sound, Brantford, Scarborough,

Brockville and Thunder Bay. A computer generated census list was sent to the project investigators, who in turn drew random samples of 100 individuals from each city. The selected participants were approached by Red Cross staff and were given preliminary information explaining the nature and purpose of the study. Within a few days, they were formally approached to provide consent to participate in the study. Consents were also obtained from the assessors for performance of their role in the project.

Of the 600 clients initially sampled 127 were excluded because they did not meet eligibility requirements (e.g., too young, already discharged by the time they were contacted, died before contact). Among the 473 individuals eligible to participate, there were 96 refusals resulting in an overall response rate of 79.7 percent. The response rate did vary by region with a low of 64.3 percent (Brockville) and a high of 100 percent (Scarborough). However, the present analyses are done at the provincial level rather than the regional level.

6.3.1.2 Secondary Data Sources

6.3.1.2.1 Community Geriatric Assessment Team - Hong Kong

A total of 2,032 frail elderly Chinese living in the Kwun Tong district of Hong Kong were used in this study. These elderly Chinese were clients of the Community Geriatric Assessment Team (CGAT), which is a community based assessment program helping the frail elderly to find suitable placement facilities or treatment programs. The sampling method was a census coverage of the entire CGAT elderly client caseload between 1994 and 1997. The data were made available courtesy of Dr. Edward Leung.

Assessors were health care professional including nurses, doctors, physiotherapists, occupational therapists and social workers who received inservice training prior to assessing the clients. A self-developed clinical instrument covering a wide range of social-demographic, functional and health measures was used. In this study, conceptually similar questions to the MDS-HC were selected to compare client characteristics.

6.3.1.2.2 National Population Health Survey

The National Population Health Survey (NPHS) is an on-going national survey of population health resulted from the recommendation of the National Health Information Council (NHIC). This recommendation was made as an effort to address the increasing economic and fiscal constrains on the health care system, and to improve the health status of the population in Canada (Statistics Canada, 1994-1995).

Began in 1994, the NPHS collected information on demographic and socio-economic status, health status, use of health services, and risk factors of household residence in all provinces of Canadian excluding populations on Indian Reserves, Canadian Forces Bases and some remote areas in Quebec and Ontario. Besides cross-sectional information, longitudinal data were also collected from a panel of individuals at two-year intervals (Statistics Canada, 1994-1995).

The sample design was a stratified two-stage design using firstly independent samples of clusters drawn from each homogeneous stratum. Then, dwelling lists were prepared for each cluster and dwellings, and households were selected from the lists. The more in-depth survey information was obtained from one randomly chosen member (aged

12 years and older) in each sample household to become the longitudinal panel respondent of all members of the household. This panel underrepresented persons coming from large households, and overrepresented persons coming from small households like single people or the elderly. A rejective technique was applied to strengthen the representiveness of the panel. This technique screens out households with no member less than 25 years old, and replaces by the larger households with parents and children (Statistics Canada, 1994-1995).

The interviewers were part-time employees of Statistics Canada Labour Forces Survey (LFS) hired and trained specifically for the survey. They were supervised and periodically monitored by senior interviewers to ensure quality of the survey. Most of the interviews were started in person and completed on the telephone due to respondent availability, which required on average one hour to complete for each household. Proxy reporting was permitted only for reasons of illness or incapacity. The 1994-1995 NPHS surveyed a sample of 20,000 Canadian households, with a response rate of approximately 88.0%. Only information from individuals 60 years and over was used for this study to match the Chinese-Canadian and Red-Cross samples.

6.3.2 Translation of the Minimum Data Set - Home Care (MDS-HC)

The MDS-HC-Chinese was translated by two experienced translators with expert conceptual and content knowledge of the instrument (Appendix B). They are also bi-lingual and bi-cultural, with extensive clinical experience in the health care system. References used to ensure cultural and content equivalence of the translation included

existing formal Canadian and American health service agencies' Chinese medical documents, Chinese scientific journal articles and questionnaires (see Chi, 1995), and advice from experienced MDS-HC translators. The translated version was further evaluated and modified by another group of bi-cultural and bi-lingual medical professionals (physicians, physiotherapists, speech-language pathologists, and nurses). Independent back-translation was performed to assess the translation equivalence, and discrepancies were revised upon mutual agreement. A pretest to the target population was conducted for final modification. As the MDS-2.0 has already been translated into 13 languages, with known cultural compatibility and sound psychometric properties (Fries et al., in press), the MDS-HC, being highly comparable with the MDS-2.0, is believed to share the same cultural compatibility and psychometric properties.

6.3.3 Development of the Supplementary Questionnaire

Although the MDS-HC is comprehensive from a health evaluation point of view, its content is insufficient on cultural issues such as health and illness beliefs, nativity, and use of TCM . To address this shortcoming, an English and Chinese supplementary questionnaire (Appendix C and D) targeting the above cultural information was developed.

The supplementary questionnaire was formulated based on published questionnaires on TCM use (Chi, 1995; Wu, 1996), on health beliefs and nativity (Wu, 1996) and through focus group discussions. This questionnaire was not intended to be comprehensive, but to supplement the required information on determinants of TCM use. A similar back translation process to the MDS-HC was adopted for the supplementary

questionnaire, and both Chinese and English versions were available to assessor and respondents.

6.3.4 Measures

6.3.4.1 Primary Data Sets

6.3.4.1.1 Minimum Data Set - Home Care

6.3.4.1.1.1 Socio-demographic Variables

The socio-demographic variables in the MDS-HC that were examined included gender, age, marital status, language, education and living arrangement.

Gender

The MDS-HC categorized the binary variable gender into male (1), which was used as the reference group, and female (2) as the comparison group.

Age

Age variable collected as a continuous variable was collapsed into grouped age cohort. For this analysis, three grouped age categories were used: less than 65 years of age (0), 65 to 74 years of age (1), and 75 years of age and older (2). Age less than 65 was used as the reference group, and dummy variables were assigned for the other 2 age groups.

Marital Status

Marital status was categorized into 6 groups: never married, married, widowed, separated, divorced, and other. For descriptive statistics, all 6 categories were used. For inferential statistics and some descriptive statistics, marital status was dichotomized into

married (0) and not married (never married, widowed, separated, divorced and other) (1). Married was treated as the reference group.

Language

For the Red-Cross study, responses to the question of language was grouped into English (0), French (1), and other (3). For the Chinese-Canadian study, language was grouped into English (0), Cantonese (4), Mandarin/Putonghua (5), and other (3). Only descriptive statistic were conducted on these variables, therefore, dummy variables were not assigned.

Education

Education was categorized into 8 groups: no schooling, grade 8 or less, grades 9-11, high school, technical or trade school, some college, bachelor's degree, and graduate degree. For descriptive analysis, the same grouping was retained. For inferential statistics, education was recoded into grade 8 or less (0), high school or some post-secondary education (1), and college or university (2). The lowest level of education category was used as the reference group, and dummy variables were assigned to the other 2 groups.

Living Arrangement

The categories derived from the living arrangement question included lived alone (1), lived with spouse only (2), lived with spouse and other(s) (3), lived with child (not spouse) (4), lived with other(s) (not spouse or children) (5), and lived in group setting with non-relative(s) (6). All 6 categories were used in the descriptive statistics. Two forms of binary recoding of the living arrangement variables were used for the inferential statistics: lived alone (0) versus not lived alone (collapsing categories 2 to 6) (1); and lived with child

(0) versus not lived with child (collapsing categories 1, 2, 5, 6). The lower categories were the reference groups.

6.3.4.1.1.2 Functional Status Measures

Functional status measures used in the analysis included memory functioning, cognitive skills for daily decision making, communication status, instrumental activity of daily living (IADL) ability, and activity of daily living (ADL) ability. Only descriptive analysis for comparative purpose was conducted so no dummy variables were needed.

Memory

Memory functioning variable in the MDS-HC assessed short term memory of recall of 3 items. Responses to this variable was dichotomized into memory OK (0) and memory problem (1).

Cognitive Skills for Daily Decision Making (Cognition)

The information assessed for this variable was how well client made decisions about organizing the day (e.g., when to get up or have meals, which clothes to wear or activities to do). The responses were categorized into: independent - decisions consistently reasonable (0), modified independence - some difficulty in new situations (1), moderately impaired - decisions poor, cues/supervision required (2), and severely impaired - rarely/never made decisions (3).

Communication

Communication status was assessed in two areas: expressive communication (how well client is understood by others), and receptive communication (how well client understands others). Responses to the expressive communication ability were grouped

into: understood (0), usually understood (1), sometimes understood (2), and rarely/never understood (3). For the receptive communication ability, responses were grouped into understands (0), usually understands (1), sometimes understands (2), and rarely/never understands (3).

IADL Ability

IADL ability was analyzed for the following 7 areas: meal preparation, ordinary house work, managing finances, managing medications, phone use, shopping, and transportation. For this analysis, each of the variables was coded into 3 difficulty levels: no difficulty (0), some difficulty (1), and great difficulty (2).

ADL Ability

ADL ability was analyzed for the following 7 areas: mobility in bed, transfer, locomotion in home, dressing, eating, toilet use, and personal hygiene. For this analysis, each of the variables was coded into 5 performance ability levels: independent (0), supervision (1), limited assistance (2), extensive assistance (3), and total dependence (4).

6.3.4.1.1.3 Outcome Measures

A total of 8 outcome measures were analyzed for this study. Each outcome measure variable was derived from specific MDS items based on clinical reasoning to reflect the state of a particular problem or concern. Other than for descriptive statistics, the outcome measure ratio scales were treated as continuos measurements for this analysis.

ADL Hierarchy

The ADL hierarchy was derived from the ADL items in the MDS-HC that conceptually measure early ADL loss (dressing, hygiene), intermediate ADL loss (transfer,

locomotion, and toileting), and late ADL loss (bed mobility, eating). For each of the loss areas, individual ADL functioning was categorized into 4 groups based on the performance level coding: independent (level 0), supervision (level 1), help (level 2), and dependent (levels 3 and 4). A 10 point hierarchical scale was created based on the degree of losses and performance level coding:

1. Independent
2. Early loss - supervision
3. Early loss - help
4. Early loss - dependent
5. Mid loss - supervision
6. Mid loss - help
7. Mid loss - dependent
8. Late loss - supervision
9. Late loss - help
10. Late loss - dependent

IADL - Capacity Measure

The IADL - capacity measure was derived from the presence of level of difficulty in 3 IADL areas: ordinary housework, meal preparation, and phone use. Scoring for these 3 areas was based on 3 level of difficulty ratings (0-no difficulty, 1-some difficulty, 2-great difficulty). A 7 point hierarchical scale was created according to the sum of the difficulty level codes:

0. No difficulty
1. Some difficulty in 1 area
2. Some difficulty in 2 areas
3. Some difficulty in 3 areas
4. Great difficulty in 1 area
5. Great difficulty in 2 areas
6. Great difficulty in 3 areas

IADL -Involvement Level

The IADL - involvement level was derived from the self performance levels in 3 IADL areas: ordinary housework, meal preparation, and phone use. For each area, self performance levels were coded as: independent - did on own (0), some help - help some of the time (1), full help - performed with help all of the time (2), and by others - performed by others (3). A 10 point scale ranging from 0 to 9 was created based on summation of the codes for the above 3 IADL areas. A score of 0 indicated independent performance in all 3 IADL areas, where 9 indicated performed by others in all 3 IADL areas.

Stamina

The stamina outcome measure was derived from the 4 MDS-HC items with a dichotomized coding of 0 or 1.

Item 1: stamina - number of days out of house
code 0 - every day or 2 to 6 days a week
code 1- 1 day a week or no days
Item 2: stamina - hours of physical activity in the last 7 days
code 0 - 2 or more hours
code 1 - less than 2 hours
Item 3: stair climbing
code 0 - up and down stairs without help,
or up and down stairs with help,
or no need to go up and down stairs but could do without help
code 1 - no need to go up and down stairs but could do with help,
or no need to go up or down stairs and no capacity to do it
Item 4: locomotion in home
code 0 - independent
code 1 - not independent

A 4 point hierarchical scale was created based on summation of the codes from the above 4 items, with a score of 0 indicating no concern in any of the 4 items, and a score of 4 indicating concerns in all 4 items.

Communication

The communication outcome measure was derived from 2 communication items: expressive and receptive communication. Each item has a 4 level coding (0 to 3) as described in the communication section of the functional status measures (6.4.3.1.1.2). A 7 point hierarchical scale was created based on summation of the codes from the 2 items, with a score of 0 indicating no communication problem, and a score of 6 indicating unable to communicate.

Cognitive Performance Scale (CPS)

The CPS has been standardized in the nursing home population (Morris et al., 1994). The 4 MDS-HC items used to create this scale included: memory, cognitive skills for daily decision making, expressive communication, and eating. Based on the individual's impairment level on the above 4 items, a 7 point CPS scale was derived:

0. Intact
1. Borderline intact
2. Mild impairment
3. Moderate impairment
4. Moderate/severe impairment
5. Severe impairment
6. Very severe impairment

Before introducing the branching logic and the assignment of scores on the CPS scale, the concept of "impairment count" and "severe impairment count" needs to be understood. Impairment count (ranging from 0 to 3) is the number of impaired areas that an individual encounters in any of the 3 areas: decision making (code 1 or 2 equals impaired), expressive communication (code 1, 2 or 3 equals impaired), or memory (code 1 equals impaired). For example, an individual being impaired in 2 areas would receive an

impairment count of 2. Severe impairment count (ranging from 0 to 2) is the number of severely impaired areas that an individual experiences in these 2 areas: decision making (code 2 equals severely impaired), or expressive communication (code 2 or 3 equals severely impaired). For example, an individual being severely impaired in 1 area would receive a severe impairment count of 1.

The branching logic of the MDS-HC CPS assignment began with the individual's impairment level in decision making. An individual being severely impaired in decision making (code 3) will be assigned to the two severely impaired levels on the CPS scale, based on whether they are totally dependent in eating (assigned to CPS scale score of 6) or not (assigned to CPS scale score of 5). For those individuals *not* having severe impairments in decision making (code 0, 1 or 2), the number of impairment and severe impairment counts is then used to further assign them into one of the 5 lower scores on the CPS scale (0 to 4). Those individuals with 0 impairment count (no impairment in decision making, expressive communication, or memory) would receive an CPS score of 0, and those with 1 impairment count would receive an CPS score of 1. Among those with 2 or 3 impairment counts, an CPS score of 2, 3 or 4 could be considered depending on the severe impairment counts. For individuals with no severe impairment count, an CPS score of 3 will be assigned. Those with 1 severe impairment count will receive an CPS score of 3, and those with 2 severe impairment count will receive an CPS score of 4, completing the CPS scale assignment from 0 to 6 (Morris et al., 1994).

Mood Symptoms

The mood symptoms outcome measure was derived from 5 MDS-HC items: feeling of sadness or being depressed, persistent anger with self or others, repetitive anxious complaints or concerns, recurrent crying and tearfulness, and withdrawn from activities of interest. Responses to each of the items were categorized using 3 codings: not exhibited in last 30 days (0), exhibited up to five days a week (1), and exhibited 6 or 7 days a week (2). A 10 point scale was created based on summation of the codes from the above 5 items, with a score of 0 indicating no mood problem as symptoms not exhibited in any of the 5 items, and a score of 10 indicating severe mood problems as symptoms exhibited 6-7 days a week in all 5 items.

Pain Symptoms

The pain symptoms outcome measure was derived based on the 3 MDS-HC items with a dichotomized coding of 0 or 1: shows evidence of pain - pain less than daily (0), pain daily (1); pain is usually intense - no (0), yes (1); and pain intensity disrupts usual activity - no (0), yes (1). A 4 point scale was created based on summation of the codes from the above 3 items, with a score of 0 indicating no pain problem, and a score of 3 indicating severe pain problems.

6.3.4.1.1.4 Client Assessment Protocols (CAPs)

Tables 6.1 to 6.30 provides the specific MDS-HC item combinations and triggering mechanisms for each of the 30 CAPs. Unlike the outcome measures, which primarily identify the state of a health problem, the CAPs also recognize the *risks* of a potential health problem. The absence of a CAP is coded 0, where a triggering is 1. A summation of the total number of CAPs triggered ranges from 0 to 30.

CAPs Related to Functional Performance

The ADL/rehabilitation potential CAP (Table 6.1) aims to identify individuals with potential for either greater independence in self-care, or who have prolonged periods in which the risk of decline is lessened. This CAP helps to recognize reversible causes of disability and to assign programs of rehabilitation for those who are motivated or where decline is recent. The IADLs CAP (Table 6.2) aims at providing interventions to restore or replace the individual's impaired function in the specific IADL areas through identifying modifiable risk factors. The objective of the health promotion CAP (Table 6.3) is to promote physical well-being and independence through increased participation in self care and pleasurable activity. Physical exercise and smoking cessation programs are particularly emphasized. The institutional risk CAPs (Table 6.4) focuses on impaired individuals who are at an elevated risk of being hospitalized. The clinical guidelines of this CAP suggests strategies to help these people to continue community living (interRAI, 1996).

CAPs Related to Sensory Performance

The communication disorders CAP (Table 6.5) identifies those community living elders with communication problems. Hearing and communication assessments referrals are suggested if impaired condition exists, and specific techniques for effective communication are provided to the individual and his/her significant others. The visual function CAP (Table 6.6) is created to assist the examination of individuals with vision loss, long-standing irreversible visual loss, or neglect in managing ocular regimens (interRAI, 1996).

CAPs Related to Mental Health

The alcohol abuse and hazardous drinking CAP (Table 6.7) mainly identifies individuals with alcohol abuse or dependence problems. Further, this CAP recognizes when drinking is non-excessive but is hazardous to the individual's health due to altered metabolism of alcohol with aging, other health complications, or drug interactions. The cognition CAP (Table 6.8) examines the presence of acute or chronic cognition problems, and to further plan appropriate compensatory strategies. The behavior CAP (Table 6.9) recognizes behavior symptoms that are distressing to the individual or others and suggests care plan options. The depression and anxiety CAP (Table 6.10) aims to identify individuals with anxiety and depression problems and to assist in intervention approaches. The elder abuse CAP (Table 6.11) identifies individuals who are at risk of, or are being abused or neglected. Decision can be made based on the CAP information whether immediate attention is needed. The social function CAP (Table 6.12) aims to identify those

who are socially dysfunctional, and to help them maintain, reinstate or develop satisfactory life roles, social relations or enjoyable activities (interRAI, 1996).

CAPs Related to Health Problems/Syndromes

The cardio-respiratory CAP (Table 6.13) can be used to alarm health care professionals of any cardiovascular or respiratory problems, and to suggest appropriate medical intervention. The dehydration CAP (Table 6.14) is used to identify the presence or risk factors of dehydration, and to suggest intervention approaches in dealing with the problem. The falls CAP (Table 6.15) recognizes any falls or risk factors of falls. Also, it assists in care planing of falls intervention, injury prevention, and to reduce the risks of falls. The nutrition CAP (Table 6.16) ascertains the occurrence of malnutrition and risk factors of developing nutritional problems. The oral health CAP (Table 6.17) identifies oral health conditions that cause pain, affect eating or speaking, lead to malnutrition, contribute to reduced self-esteem, and limit enjoyment of food. The pain CAP (Table 6.18) distinguishes individuals with pain which limits their functional abilities. The reasons for this limitation may be due to direct pain or fear of pain, of which different intervention approaches may apply. The pressure ulcers CAP (Table 6.19) ascertains risk factors for developing skin breakdown, and assists in developing prevention and treatment programs for pressure ulcers. The skin and food conditions CAP (Table 6.20) recognizes skin or foot problems, or risk factors of developing these problems. Care planing suggestions for the prevention and management of these problems are also suggested (interRAI, 1996).

CAPs Related to Service Oversight

The adherence CAP (Table 6.21) examines behaviors which relate to adherence to treatments and programs as adherence to treatments is a determining factor to better health outcomes. The brittle support system CAP (Table 6.22) identifies families with difficulties caring for their impaired elders which leads to brittle informal support. The medication management CAP (Table 6.23) compiles a comprehensive list of all medications used, and alerts the individuals the importance of receiving on going medication evaluation by a physician in order to minimize potential harm. The palliative care CAP (Table 6.24) identifies individuals who need a palliative care plan. The preventive health care measures: immunization and screening CAP (Table 6.25) determines if an individual lacks preventive health measures or has unmet preventive needs. The psychotropic drugs CAP (Table 6.26) recognizes individuals who are taking psychotropic medications and in need of a medical review of these medications for better health outcomes. The reduction of formal services CAP (Table 6.27) identifies individuals who are presently receiving formal services, and could benefit from a reduction of some of these services for improved independence. The environmental assessment CAP (Table 6.28) ascertains environmental conditions that could place an individual at risk of being injured (interRAI, 1996).

CAPs Related to Continence

The bowel management CAP (Table 6.29) examines gastrointestinal problems that lead to bowel functioning and disorders. The urinary incontinence and indwelling catheter CAP (Table 6.30) evaluates incontinence problems that are potentially reversible, and overviews possible treatment approaches (interRAI, 1996).

Table 6.1: Triggers for the ADL/Rehabilitation Potential CAP

A THREE-STEP TRIGGERING PROCESS

(1) ADL deficits are present:

- Individual receives supervision or physical help from others in two or more ADL areas *[H2a-g = 1-3, 8]; [H3 = 1-3, 8]*

(2) AND Has some ability to make decisions *[B2 = 0,1,2]*

(3) AND One or more of the following are present:

- Individual has declined in functional status as compared to 90 days ago *[P61 = 2]*
- Unstable or acute condition *[K8b,c, or d = checked]*
- Client, caregiver, or assessor believes that functinal improvement is possible *[H7a or b = checked]*

Table 6.2: Triggers for the Instrumental Activities of Daily Living (IADL) CAP

An IADL problem is considered to be present when the client has some ability to make decisions (B2 = 0,1,2) and has difficulty (or would have a great deal of difficulty) in one or more of the following IADL areas:

- Meal preparation *[H1aB = 1,2]*
- Ordinary work around the house *[H1bB = 1,2]*
- Managing medications *[H1dB = 1,2]*
- Phone use *[H1eB = 1,2]*
- Shopping *[H1fB = 1,2]*
- Transportation *[H1gB = 1,2]*

Table 6.3: Triggers for the Health Promotion CAP

A life style or stamina problem suggested when decision making not severely impaired (B2 Not =3) and one or more of following:	
• Out of house infrequently	*[H6a=2 or 3]*
• Less than two hours of physical activity in last 7 days	*[H6b=1]*
• Not able to climb stairs on own	*[H5=1,3,4,8]*
• Client feels he/she has poor health	*[K8a=checked]*
• Smoked or chewed tobacco daily	*[K7e=1]*

Table 6.4: Triggers for the Institutional Risk CAP

The following sets of conditions suggest that the elder is at a relatively high risk of nursing home placement in the ensuing 24-month period.	
Two or more of the following are present - NH-Risk©:	
• Prior nursing home placement	*[CC5a = checked]*
• Goes out one or fewer days a week	*[H6a = 2,3]*
• Incontinent of urine	*[I1 = 4]*
• Neurological diagnosis	*[J1g-k = checked]*
• Fell 2 or more times in past 180 days	*[K5 = 2 or more]*
• Functional decline past 90 days	*[P6 = 2]*
• One or more ADL deficits (dressing, eating, toilet use, personal hygiene, bathing)	*[H2d-g = 2-4, 8; H3 = 1-4,8]*

Table 6.5: Triggers for the Communication Disorders CAP

Communication problem suggested if one or more of following present:	
• Hearing difficulty	*[C1 = 1-3]*
• Problem making self understood	*[C2 = 1-3]*
• Problem understanding others	*[C3 = 1-3]*

Table 6.6: Triggers for the Visual Function CAP

Review is suggested if one or more of the following is present:	
• Vision impairment	*[D1 = 1,2,3]*
• Any visual limitation/difficulty	*[D2 = 1]*
• Worsening of vision	*[D3 = 1]*

Table 6.7: Triggers for the Alcohol Abuse and Hazardous Drinking CAP

An alcohol abuse or dependency problem is suggested if either of the following is present:

- Felt need or been told by others to cut down on drinking, or others concerned with elder's drinking *[K7a=1]*
- Elder has to have drink first thing in the morning to steady nerves (i.e., an "eye opener") or been in any sort of trouble because of drinking *[K7b=1]*

Determining Frequency and Quantity of Use -- Risk of Hazardous Drinking [Note -- not a trigger condition]

- In a typical week, number of days had one or more drinks. *[H5c]*
- On days had a drink, number of drinks usually consumed? *[H5d]*

Table 6.8: Triggers for the Cognition CAP

A cognition problem suggested if one or more of following present:	
• Short-term memory appears to be a problem	*[B1 = 1]*
• Moderately or severely impaired in making decisions organizing the day	*[B2 = 2,3]*
• Sudden or new onset or change in mental function	*[B3a = 1]*
• In the last 90 days, client has become agitated or disoriented such that his or her safety is endangered or client requires protection by others.	*[B3b = 1]*

Table 6.9: Triggers for the Behavior CAP

Review of behavior status suggested if one or more of following present:	
• Wandering, not easily controlled	*[E2a = 2]*
• Verbally abusive, not easily controlled	*[E2b = 2]*
• Physically abusive, not easily controlled	*[E2c = 2]*
• Social inappropriate/disruptive, not easily controlled	*[E2d = 2]*
• Resists care, not easily altered	*[E2e = 2]*
• Behavioral symptoms worse or less tolerated by family in last 30 days	*[E3 = 1]*

Table 6.10: Triggers for the Depression and Anxiety CAP

A mood problem is suggested if one or more of the following are present at least six days a week over the last 30 days:	
• A feeling of sadness or depression.	*[E1a = 2]*
• Persistent anger with self or others	*[E1b = 2]*
• Repetitive anxious complaints, concerns	*[E1c = 2]*
• Sad, pained, worried facial expressions	*[E1d = 2]*
• Recurrent crying, tearfulness	*[E1e = 2]*
• Withdrawal from activities of interest	*[E1f = 2]*

Table 6.11: Triggers for the Elder Abuse CAP

Review is suggested if one or more of the following is present:	
• Fearful of a family member or caregiver	*[K9a = checked]*
• Unexplained injuries, broken bones, burns	*[K9b = checked]*
• Neglected, abused, or mistreated	*[K9c = checked]*
• Physically restrained	*[K9d = checked]*

Table 6.12: Triggers for the Social Function CAP

A social functioning problem is suggested if one or more of the following are present:	
• Ill at ease interacting with others	*[F1a=1]*
• Openly expresses conflict or anger with family/friends	*[F1b = 1]*
• Decline in last 180 days in subject's participation in social, religious, occupational, or preferred activities	*[F2=1,2]*
• Left alone during the day	*[F3a=2,3]*
• Often feels lonely	*[F3b=1]*

Table 6.13: Triggers for the Cardio-Respiratory CAP

Review for cardio-respiratory problem when one or more of the following present:	
• Irregularly irregular pulse	*[J1e = checked]*
• Change in sputum production	*[K3a = checked]*
• Chest pains	*[K3b = checked]*
• Dizziness or light headednes	*[K3d = checked]*
• Edema	*[K3e = checked]*
• Shortness of breath	*[K3g = checked]*

Table 6.14: Triggers for the Dehydration CAP

Dehydration suggested if one or more of the following is present:	
• Diarrhea or vomiting lasting longer than a day in the last 7 days	*[K2a,d= checked]*
• Fever on at least 2 of last 7 days	*[K2c= checked]*
• Dizziness or lightheadedness in last 7 days	*[K3d = checked]*
• Has had a noticeable decrease in the amount of food usually eaten or the amount of fluids usually consumed in the last 3 days	*[L2b = 1]*

Table 6.15: Triggers for the Falls CAP

Potential for additional falls or risk of initial fall suggested if one or more of following present:	
• Dizziness or lightheadedness in last seven days	*[K3d = checked]*
• Falls frequency. Number of falls in the last 180 days	*[K5=1 or more]*
• Has unsteady (abnormal) gait	*[K6a=1]*
• Limits activities because fearful of falling	*[K6b=1]*
• More than 6 medications	*[Q1=7 or more]*
• Antipsychotic medication	*[Q2a=1]*
• Antianxiety medication	*[Q2b=1]*
• Antidepressant medication	*[Q2c=1]*

Table 6.16: Triggers for the Nutrition CAP

A nutrition problem is suggested if one or more of following is present:	
• Loss of appetite	*[K2d = checked]*
• Unintended weight loss of 5% or more in the last 30 days or 10% or more in the last 180 days	*[L1 = 1]*
• In at least 4 of the last 7 days, ate one or fewer meals a day	*[L2a = 1]*

Table 6.17: Triggers for the Oral Health CAP

Oral Health Problem suggested if one or more of the following are present:	
• Problem in chewing or swallowing (e.g., pain while eating)	*[M1a = checked]*
• Mouth is "dry" when eating a meal	*[M1b = checked]*
• Problem brushing teeth or dentures	*[M1c = checked]*

Table 6.18: Triggers for the Pain CAP

A pain problem is suggested if one or more of following present:	
• Complains or shows evidence of pain	*[K4a = 1,2]*
• Pain that is unusually intense	*[K4b = 1]*
• Pain intensity disrupts usual activity	*[K4c = 1]*

Table 6.19: Triggers for the Pressure Ulcers CAP

Review if one or more of following present:	
• Bed mobility problem	*[H2a = 2-4, 8]*
• Fecal incontinence	*[I3 = 2-4]*
• Pressure ulcer present	*[N2a= 1-4]*
• History of a previous pressure ulcer	*[N4 = 1]*

Table 6.20: Triggers for the Skin and Foot Condition CAP

• Any troubling skin conditions or changes in the last 30 days	*[N1 = 1]*
• Corns/calluses, structural problems, infections, fungi on feet	*[N6a = checked]*
• Open lesions on foot	*[N6b = checked]*
• Feet not regularly inspected	*[N6c = checked]*

Table 6.21: Triggers for the Adherence CAP

Adherence problem suggested if individual not compliant all or most of the time one with one or more of the following	
One or more of the listed treatments or therapies	*[P2a-gg = any 2, 3]*
Medications prescribed by the physician	*[Q4 = 2]*

Table 6.22: Triggers for the Brittle Support System CAP

Review for possible brittle informal support system when two or more of following are present:

- Absence of identified primary caregiver who provides care on a regular basis *[G1e=2]*
- Primary caregiver reports that he/she is unable to identify or provide care should the need arise *[G1l (A=2); or G1kB and G1lB both =2)]*
- Absence of commitment by helper to continue with current activities *[G2a=checked]*
- Primary caregiver is not satisfied with support received from family and friends *[G2b=checked]*
- Primary caregiver expressing feelings of anger or depression *[G2c=checked]*

Table 6.23: Triggers for the Medication Management CAP

Primary Triggers. Taking 5 or more medications [O1 = 5 or more] and *potential for inappropriate drug therapy suggested if one or more of the following present:*

• Renal failure	*[J1z]*
• Extrapyramidal syndromes (e.g., Parkinsonism akathisia, tardive dyskinesia)	*[J1k, M1a]*
• Diarrhea	*[K2a = checked]*
• Dry mouth	*[M1b = checked]*
• Vomiting	*[K2e = checked]*
• Constipation	*[K3c = checked]*
• Dizziness	*[K3d = checked]*
• No doctor with whom elder has discussed all current medications	*[Q3 = 1]*

Secondary Triggers. These items are primary triggers for other CAPs, and are to be reviewed under those CAPs. Potential for inappropriate drug therapy suggested if taking 5 or more medications [01=5 or more] and one or more of the following:

• Depression	*[2 or more of the items E1a-f]*
• Confusion	*[B3g = 1]*
• Incontinence	*[I1 = 2-4 or I3 = 2-4]*
• Dehydration	*[L2c = 1]*
• Loss of memory	*[B1 = 1]*
• Falls	*[K5 = 1 or more]*
• Rashes, itching, bruising	*[N1 = 1]*
• Decline in social function	*[F2 = 1,2]*

Table 6.24: Triggers for the Palliative Care CAP

Review for whether Palliative Care approach may be appropriate when the following is present:	
• End stage disease, with six or fewer months to live	*[K8e = checked]*

Table 6.25: Triggers for the Preventive Health Measures: Immunization and Screening CAP

A preventative health followup review is required when one or more of following are present:	
• Failure to have Blood Pressure measurement	*[K1a=not checked]*
• Failure to receive Influenza vaccine	*[K1b=not checked]*
• Failure to have (if female) breast examination	*[K1c=not checked]*

Table 6.26: Triggers for the Psychotropic Drugs CAP

Further assessment is indicated when the client is taking a psychotropic drug *[O2a,b,c =1]* and has one or more of the following conditions:	
• Indicators of delirium	*[B3a=1 or B3b=1]*
• Decline in vision over the past 90 days	*[D3=1]*
• Active and continual problems with mood and behavior	*[2 or more of the items in E1a-f=2 or any item E2a-e=2]*
• Worsening behavioral symptoms	*[E3=1]*
• Trouble walking	*[H2c=2-4,8]*
• Incontinence	*[I1=2-4 or I3=2-4]*
• Delusions, hallucinations	*[K3h, or K3i = checked]*
• Falling in the past 180 days	*[K5=1 or more]*
• Unsteady gait	*[K6a= 1]*
• Suspected alcohol problem	*[K7a=1, K7b=1, or K7d=3 or more]*
• Weight change of 5% or more in the last 30 days or 10% or more in the last 180 days	*[L1=1]*
• Dry mouth	*[M1b is checked]*
• Use of 5 or more medications	*[Q1 = 5 or more]*

Table 6.27: Triggers for the Reduction of Formal Services CAP

Review for potential to reduce services when no indication that further improvement possible [K7d =checked] and where one or more of following occur:	
• An improvement in functional status	*[P6=1]*
• Change in elder's living arrangement that increases availability of resources	*[O2a=1]*
• One or more treatment goals met in the past 90 days	*[P5=1]*

Table 6.28: Triggers for the Environmental Assessment CAP

Review for potential role of environmental factors in impeding function when one or more of the following factors are present that make the home environment uninhabitable or hazardous.	
• Lighting	*[O1a = check]*
• Flooring and carpeting	*[O1b = check]*
• Bathroom and toilet room environment	*[O1c = check]*
• Kitchen environment	*[O1d = check]*
• Heating and cooling	*[O1e = check]*
• Personal safety (violence)	*[O1f = check]*

Table 6.29: Triggers for the Bowel Management CAP

Review for bowel problem when one or more of the following present:	
• Bowel incontinence	*[I3 = 1-4]*
• Diarrhea	*[K2a = checked]*
• Constipation	*[K3c = checked]*

Table 6.30: Triggers for the Urinary Incontinence and Indwelling Catheter CAP

A problem with urinary continence is suggested if:	
• Occasional, Frequent, or Frank Urinary Incontinence	*[I1 = 2-4]*
• Use of Pads	*[I2a = checked]*
• Use of Indwelling Catheter	*[I2b = checked]*
Exclusions for Triggers: Comatose or Explicit terminal prognosis.	

6.3.4.1.1.5 Health and Psychosocial Conditions

Variables used to measure health and pychosocial conditions for this analysis included: total number of diseases (and number of different types of diseases), perceived poor health, flare up of health conditions, physical health problems, feels lonely, mental health problems, and social isolation problems.

Total Number of Diseases

The total number of diseases (J1) counts the number of diseases diagnosed in each of the following areas: heart/circulation, neurological, musculo-skeletal, senses, infections and other diseases. This variable behaved as a continuous variable for the analysis.

Perceived Poor Health

The perceived poor health variable (K8a) required the individual to provide a binary response of no poor health perceived (0) or poor health perceived (1). No poor health perceived was the reference variable.

Flare-up of Health Conditions

For this variable, individuals were asked to respond if they experienced a flare-up of a recurrent or chronic problem. Not experiencing a flare-up (0) was the reference variable to experiencing a flare up (1).

Physical Health Problems

The physical health problems measure was derived from MDS-HC items of presence of diarrhea (K2a), difficulty urinating or urinating 3 or more times at night (K2b), fever (K2c), loss of appetite (K2d), vomiting (K2e), changes in sputum production (K3a),

chest pain at exertion or chest pain/pressure at rest (K3b), constipation in 4 of last 7 days (K3c), dizziness or light headedness (K3d), edema (K3e), and shortness of breath (K3f). For this analysis, the physical health problem was code 0 when non of the above conditions existed, which was treated as the reference group. Having any one of the conditions has a physical health problems measure of 1.

Feels Lonely

Indicating of feeling lonely (F3b) was categorized into 1, where not feeling lonely was 0, which was the reference group.

Mental Health Problems

The mental health problems measure was derived from the MDS-HC items of delusions (K3g) and hallucinations (K3h). Not having any of the conditions was coded as having no mental health problems (0), which was the reference group, where having any one of the conditions was coded as having mental health problems (1).

Social Isolation Problems

The social isolation problems measure was derived from the MDS-HC items of living arrangement (Cc4), isolation - length of time alone (F3a), and isolation - feels lonely (F3b). Not lived alone, and not being isolated was coded as having no social isolation problems (0), which was the reference group, where lived alone or any isolation issues was coded as having social isolation problems (1).

6.3.4.1.1.6 Health Practice Variables

The health practice variables used for this study were drinking problems, number of days drinking, number of drinks, and smoking.

Drinking Problems

The MDS-HC dichotomized items on whether the respondent felt the need or was told by others to cut down on drinking, or others were concerned with respondent's drinking (K7a); and if the respondent had to have a drink first thing in the morning to steady nerve or has been in trouble because of drinking (K7b), in the last 90 days, were used to derive the drinking problems variable. If respondent answered "no" to both of the questions, the drinking problem variable would receive a code of 0, indicating no such a problem (the reference group), where a "yes" to any of the two questions would receive a code of 1, indicating having drinking problems.

Number of Days Drinking

This continuos variable (K7c) assessed the number of days (0-7) the respondent had one or more drinks over a typical week.

Number of Drinks

This variable (K7d) recorded the number of drinks usually consumed per day by the respondent was left continuos, where 0 indicated no drinks and 9 indicated 9 or more drinks.

Smoking

Smoking or chewed tobacco daily (K7e) was dichotomized into 0 (no smoking), which was the reference group, and 1 (smoking).

6.3.4.1.1.7 Service Utilization Measures

Variables used for service utilization measures included: formal services used, hospitalized, emergency room visited, and medication reviewed.

Formal Service Used

The formal service used variable was derived from the MDS-HC items of formal care use (P1a to j), and special treatments, therapies, and programs (P2a to hh). Not using any of the services resulted a formal service used code of 0, which was the reference group, and using any of the services was coded as 1.

Hospitalized

Response to question "number of times admitted to hospital with an overnight stay" (P4a) was dichotomized into not being hospitalized (0), and being hospitalized (1) (having 1 or more admissions). The not being hospitalized variable was the reference group for this analysis.

Emergency Room Visited

Response to the question "number of times visited emergency room without an overnight stay" was dichotomized into no emergency room visited (0), and visited emergency room (1) (having 1 or more visits). The no emergency room visited variable was the reference group for this analysis.

Medication Reviewed

For the medication review question (Q3), the response was binary with 1 as not being reviewed, and 0 as being reviewed. The not being reviewed group was the reference group for this analysis.

6.3.4.1.2 Supplementary Questionnaire

6.3.4.1.2.1 Cultural Variables

Cultural variables in the supplementary questionnaire that were analyzed for the study included: country of origin, English proficiency, length of stay in Canada, nativity, and health beliefs scales.

Country of Origin

Country of origin was categorized into 5 groups: Hong Kong (0), China (1), Taiwan (2), Vietnam and South East Asian Countries (3), and other countries(4). For his analysis, the country of origin groupings were collapsed into 3 groups: Hong Kong or Taiwan (0) (as immigrants from Hong Kong and Taiwan have similar cultural background, socio-economical status and reasons for immigration), China (1), and other countries (2) (Vietnam and other countries). Hong Kong/Taiwan was used as the reference group, and dummy variables were assign for the other two groups for analysis.

English proficiency

Proficiency level for the English language was measured in two areas: written English and spoken English. For each area, responses were categorized into 3 levels, fluent (0), know some (1), and non-fluent (2). Fluent in English was utilized as the

reference group (0), and dummy variables were used for the 2 highest groups in the analysis.

Length of Stay

Length of stay in Canada was measured in number of years (less than 1 year was treated as 1 year). This variable was left continuous within the analysis.

Nativity

Nativity in this study measured the degree of "Chineseness" of an individual. A total of 13 questions were asked to determine how "Chinese" they are:

1. if you were at home, you speak...
2. if you were at work, you speak...
3. if you can choose, you prefer to speak...
4. when your parents talk to each other, they speak...
5. when your children talk to each other, they speak...
6. before age 18, your friends were...
7. your friends today are...
8. your music preference is...
9. your movie preference is...
10. your food preference is...
11. you prefer to think in...
12. you prefer to write in...
13. you prefer to read in...

Responses to these questions fell into one of the 5 categories: Chinese only (1), mostly Chinese and some English (2), both Chinese and English in equal amount (3), mostly English and some Chinese (4), and English only (5). Only 12 of the 13 questions (excluded question number 4 as all parents spoke Chinese to each other, resulting no variance in this measure) were used to create the nativity scale, which summated scores of the 12 questions. The resulting summary score for the nativity index ranged from 12 (very

"Chinese") to 60 (very "non-Chinese"). The nativity scale was left continuous for the analysis.

Health Beliefs

The health beliefs scale in this study measured how much an individual believed in using TCM. Variables used to create the health beliefs index included:

1. combining Western medicine and TCM can get most effective treatment results
2. TCM is less harmful to one's body than Western medicine
3. I would try TCM for incurable illnesses

Responses were categorized into 5 groups ranging from strongly disagree (1) to strongly agree (5). For this analysis, the responses were collapsed into a 3 point scale: disagree (1), neither agree of disagree (2), and agree (3). The summated score from the recoded 3 questions resulted a 7 point health beliefs scale ranging from 3 to 9, where a higher score reflecting a stronger believe in TCM. This scale was left continuous for the analysis.

6.3.4.2 Secondary Data

6.3.4.2.1 The Community Geriatric Assessment Team (CGAT) and the National Population Health Survey

Conceptually similar variables in the CGAT and the NPHS were used to compare with the MDS-HC variables. These included the social-demographic variables, and the functional status measures.

6.3.4.2.1.1 Socio-demographic Variables

The socio-demographic variables in the CGAT and the NPHS that were examined included gender, age, marital status, language, education (only for NPHS) and living arrangement. These variables were recoded to match the grouping levels of the MDS-HC

variables for comparison purposes. Description of these variables can be obtained from the MDS-HC measures section (6.3.4.1.1.1).

6.3.4.2.1.2 Functional Status Measures

Functional status measures used only the CGAT data included memory functioning, cognitive skills for daily decision making, communication status, instrumental activities of daily living (IADL) ability, and activities of daily living (ADL) ability. These variables were recoded to match the grouping levels of the MDS-HC variables for comparison purposes. Description of these variables can be obtained from the MDS-HC measures section (6.3.4.1.1.2).

Functional status measures not available for the CGAT were ADL variables measuring mobility in bed, and transfer.

6.3.5 Assessor Training

Assessor qualifications for the primary studies (the Chinese-Canadian and the Red-Cross Canadian studies) complied with the MDS-HC guidelines. Assessors were medical professionals belonging to one of these groups: physicians, nurses, or therapists. All assessors were trained using a standardized training protocol involving a two full day training session preceded by a detailed individual review of the assessment manual. On the first day, a general overview of the history and development of the MDS, objectives of the research, and a comprehensive section-by-section study of the MDS-HC form were undertaken. All assessors were then given a true-case assessment to complete as a practice. On the second day, the completed MDS-HC assessment was examined, followed

by an item-by-item problem solving and detail group analysis of questions encountered in assessment .

Assessors were also given training on interviewing techniques, cultural sensitivity issues, and ethical considerations. The intensive and comprehensive training sessions, together with the qualifications of the professional assessors produced well trained and competent assessors, who not only could effectively conduct the study in a reliable manner, but also were able to convey the objectives of the study in a receptive manner. These skills and qualifications were critical to the reputation and success of the study.

The MDS Trainers, a masters-prepared nurse, and a masters Speech-Language Pathologists (for the Chinese-Canadian study only) reviewed all MDS-HC assessments for completeness, accuracy and appropriateness. When potential problems were identified, the Trainer contacted the assessor in order to clarify the items in question. All Red-Cross data were compiled and cleaned at Providence Centre's Research Department, and the Kitchener/Waterloo data at the Waterloo University. The CAPs for each Red-Cross Homemaker program client were computed and results were reported back to the relevant regional office.

6.3.6 Data Collection for the Primary Data Sets

After consent was obtained, data were collected using face-to-face assessments. The full MDS-HC instrument and the supplementary questionnaire were administered in a standardized format using direct questioning of the elderly person and his or her informal caregivers, assessing clinical areas, observing the elderly in the home environment, and

reviewing other health-related documents when available. Proxy response was permitted only if the elderly person was unable to provide the information. The Red-Cross Canadians were assessed only using the MDS-HC.

Each assessment took approximately one hour to complete. For medication use, assessors reviewed and recorded all the TCM, prescription and OTC medications used by the elders.

6.3.7 Data Analysis

Dependent variables of the study consisted of the different medication utilization variables. Binary medication use variables included use of any medicine (Western or TCM), Western medication use, TCM medication use, polypharmacy including TCM (using more than 3 medicines, belonging to either TCM or Western medicine), polypharmacy excluding TCM (using more than 3 Western medicines, not counting TCM), and combined medication use (using Western medicine and TCM jointly). No further grouping was made for prescription and OTC medicines. Continuous medication use variables included number of any medication used (use of TCM and/or Western medicine), number of Western medication used, and number of TCM used. Independent variables consisted of socio-demographic variables, outcome measures, health and psychosocial conditions, health practice variables, service utilization measures, and cultural measures.

Descriptive statistics were used to analyze the distributions of variables at the univariate level. The percentage distributions were reported for categorical variables including socio-demographic variables, some cultural measures (e.g., country of origin,

written and spoken English), functional status measures, and outcome measures. The means, standard error, median, first and third quartile ranges were reported for continuous variables such as some cultural measures (e.g., length of stay, nativity and health beliefs scales), number of diseases, and number of medication used.

Chronbach's test for internal consistency (alpha) was performed for the nativity and the health beliefs scales.

To examine statistical differences between variables, t-tests were employed for the association between binary variables (e.g., Western medicine use, polypharmacy) and ratio/continuous variables (e.g., outcome measures, nativity scale). For dependent and independent variables that were categorical (e.g., combined medication use and living arrangement), Chi-square statistics was used to assess their relationship. Pearson's Correlation Coefficient was used to examine linear relationship between ratio/continuous variables (e.g., number of medication used and outcome measures).

Variables significant at the bivariate level were tested in the multivariate linear regression model to examine their independent and weighted effects on the continuous dependent variables (number of various medications used), and in the multivariate logistic regression model to examine the same effects on the binary medication use variables (use of a certain type of medication).

The logistic regression model analyses data of a binary response variate. It provides an estimate of the probability of an event based on a set of continuous and/or categorical variables (Matthews and Farewell, 1988). In the study of medication use, for example, the probability of using TCM takes on a function of Pr(Y=1), then not using

TCM will be 1-Pr(Y=1). The binary logistic regression model for Y can be specified by the following equations:

$$\log \frac{Pr(Y=1)}{1-Pr(Y=1)} = a + \Sigma \beta_i x_i$$

or

$$Pr(Y=1) = \frac{e^{a+\Sigma \beta_i x_i}}{1 + e^{a+\Sigma \beta_i x_i}}$$

the variable a is the intercept term, and βi represents the values of the beta coefficient. The term $\Sigma \beta_i x_i$ indicates the effects of i independent variables. The beta coefficient βi can take on a positive or negative value, indicating the direction and relative degree of the association between the independent variables and the dependent variable, use of TCM, for example. If βi is zero, then the independent variable x_i is not associated with use of TCM. Another convenient form of representing these estimates is the use of odds ratios which is calculated by exponentiating the beta coefficient. For the event of interest, use of TCM, given the independent variable, perceived poor health, an odds ratio of greater than 1 indicates that individuals with perceived poor health are more likely to use TCM than no perceived poor health. An odds ratio of less than 1 will therefore indicate a reduced likelihood of using TCM for those with perceived poor health. The multivariate logistic model also allows for controlling of other variables in the model while testing the independent effect of the chosen variable.

Statistical interactions were also explored for variables that conceptually may interact (i.e., whether the effect of a particular independent variable [e.g., perceived poor health] is modified by a second variable [e.g., number of diseases]). Possible interactions

were tested between cultural variables (e.g., country of origin, nativity, and health beliefs) and outcome measures (e.g., pain symptoms); disease number and outcome measures (e.g., ADL hierarchy); and health variables (e.g., perceived health, feels lonely) and outcome measures (e.g., pain symptoms). Quadratic terms were included for several independent continuous variables (e.g., nativity and health beliefs scales, number of diseases) when a curvilinear relationship to the dependent variables was suspected.

Finally, regression diagnostics were examined for the dependent variables of each of the final models to ensure appropriate data fit.

6.4 Results

6.4.1 Internal Consistency Estimates of Reliability

Internal consistency estimates of reliability was performed for the nativity and health belief scales using Cronbach's alpha (Shelly, 1984). The alpha value for the nativity scale was 0.91 indicating excellent internal consistency. The alpha value for the health belief scale was 0.73 which is acceptable considering the length of the scale (3 items). According to Nunnally (1978), Cronbach's alpha is the first estimate of reliability that should be obtained when developing a scale. If alpha value is very low, it could be indicative of test items being heterogeneous, or the scale is too short.

6.4.2 Univariate Distributions

The univariate distributions were examined for the 4 sets of data mentioned previously: the Chinese-Canadian (the Kitchener/Waterloo study), the Red-Cross Canadian (the Ontario study), the Chinese-Hong Kong (the CGAT Hong Kong study), and the general Canadian (the NPHS study) data. Socio-demographic, cultural, and functional status variables were summarized in a number of tables. Depending on the availability of information and the purpose of comparison, not all variables were analyzed for each data set (e.g., the NPHS information was used to assess cultural diversity in the general population in comparison to the Red-Cross sample, and to provide a socio-demographic profile against which the Chinese-Canadian population and the Red-Cross Canadian samples can be assessed).

Socio-demographic Variables

Table 6.31 shows that the Chinese-Canadian population was comprised of more females than males (64.1% versus 35.9%), and the majority of the respondents were between 65 and 74 years old (57.6%). Similarly, the Red-Cross Canadian, the Chinese-Hong Kong, and the NPHS samples also contained more females than males. However, the age distribution reflected a different pattern. The majority of the respondents in the Red-Cross sample (66.6%), and the Chinese-Hong Kong sample (72.1%) fell in the 75 years and older category, compared with 30.2% in the Chinese Canadian, and 26.9% in the NPHS samples. Most of the respondents in the Chinese-Canadian sample were married (56.5%) or widowed (39.1%), and in the NPHS sample, the distribution is similar (63.0% married and 31.2% widowed). For the Red-Cross sample, the majority of the respondents was widowed (56.4%), followed by married (28.2%). The same pattern is observed with the Chinese-Hong Kong sample with 60.9 % widowed, and 27.2% married. Most of the Chinese-Canadians spoke either Cantonese (46.5%) or Mandarin/Putonghua (38.4%), which are the two most common dialects in the Chinese language. All Chinese-Hong Kong spoke Chinese, and no further breakdown in dialect was available. In the Red-Cross Canadian sample, the majority of the respondents (91.4%) used English or French as their primary language, with only a small portion (8.3%) spoke other languages. Similarly, the NPHS sample also were comprised primarily of English (52.9%) and French (13.6%) speaking respondents, with a higher percentage of those who speak Other language (20.7%). This comparison shows that there is less ethnic/cultural diversity in the Red-Cross Canadian sample than the general Canadian sample. A large proportion of the

Chinese-Canadians had either no schooling (30.4%) or less than grade 8 education (30.4%), and the other 23% had college or above schooling, reflecting a bimodal distribution. Almost half of the Red-Cross Canadians had less than grade 8 education, nearly 40% had some form of high school or trade school education, and about 20% had some college or more education. Over 20% of the general Canadians had less than grade 8 education, and almost half of them had some form of high school or trade school education, and about 13% had some college or more education. No education information was available for the Chinese-Hong Kong sample. Thirty-nine percent of the Chinese-Canadian sample lived with their children and without a spouse, and 37% lived with their spouse and children. Few lived alone (9.8%) or with their spouse only (9.8%). With the Red-Cross Canadian sample, the majority of them lived alone (58.1%), or lived with spouse only (25.5%). Only 10.9% lived with children. For the Chinese-Hong Kong sample, most of the respondents lived with someone other than spouse or children (57.1%). About 11% lived with children, and 11.4% live with spouse. Only 9.5% lived alone. The NPHS sample shows that most of the general Canadians lived with spouse (51.3%) followed by lived alone (28.2%). Very few lived with their children (3.1%).

Cross-tabulation results indicate that the four samples differ significantly. In comparison, the Chinese-Canadian and the NPHS samples were younger than both the Red-Cross and Hong Kong samples. Most Chinese-Canadians and general Canadians were married, as opposed to widowed for the Red-Cross Canadians and the Chinese-Hong Kong. Education level for the Red-Cross and the NPHS samples was more evenly distributed than the Chinese-Canadian sample, of whom either little education or highly

educated were the majorities. Most Chinese (Chinese-Canadian and Chinese-Hong Kong) did not live alone in contrast to a large proportion of the Red-Cross Canadians and some of the general Canadians who lived alone.

Cultural and Beliefs Measures

Measures of culture and beliefs for the Chinese-Canadian sample are summarized in Tables 6.32 and 6.33. Country of origin for the Chinese-Canadian sample was evenly distributed with respondents coming from Hong Kong/Taiwan (34.0%), China (30.2%) and other countries (35.8%). Most of them were not proficient in either written or spoken English. The mean length of stay for the Chinese-Canadians in Canada was 11.6 years, but with a great deal of dispersion (SD=10.2 years) in the distribution. All of the Chinese-Canadians are first generation Canadians, as they all came from overseas, and the longest length of stay was 49 years. For measure of nativity, most of them received scores reflecting a high degree of "Chineseness" (the mean, first and third quartile all were at or below a score of 14, with the possible range of scores of 12 to 60). For health beliefs, the mean score was 6.7 (based on the possible range of 3 to 9), indicating that the majority of the Chinese-Canadians believed in TCM.

Functional Status Measures

Various functional status measures were analyzed for the Chinese-Canadian, Red-Cross Canadian and Chinese-Hong Kong samples (Table 6.34). The majority of both the Chinese and Red-Cross Canadians had no memory problems as opposed to the Chinese-Hong Kong sample, whom over 70% had memory problems. Similar observations with

cognitive ability in decision making were noted for the Chinese and Red-Cross Canadians, where most of the respondents were independent in decision making. The Chinese-Hong Kong sample was relatively more dependent than the Chinese and Red-Cross Canadians. Most Chinese and Red-Cross Canadians (about 90%) had no communication problems, but only 50% of the Chinese-Hong Kong sample shared this classification.

For instrumental activities of daily living (IADL), most of the Chinese-Canadian respondents' ability were intact for managing finance (84.6%), medications (79.0%), and shopping (89.6%). Many had at least some difficulty in phone use (43.4%) and transportation (60.4%). Meal preparation and house work difficulties were experienced by about half to two thirds of the respondents (47.2% and 66.0%). For the Red-Cross Canadian sample, ability in phone use was most intact (82.5%), followed by managing medications (67.6%). A majority of the Red-Cross Canadians had at least some difficulties in all other areas of IADL. The IADL ability in phone use of the Chinese-Hong Kong sample was relatively intact (41.1%), but difficulties were present in almost all other areas of IADL.

With respect to activities of daily living (ADL), the Chinese-Canadian sample, as well as the Red-Cross Canadians, experienced very little problems. As for the Chinese-Hong Kong, except for eating, nearly half of the respondents had some difficulties with ADL functioning.

In general, the Chinese-Canadians and the Red-Cross Canadians were similar in their functional status, but the Chinese-Hong Kong were more functionally impaired. This

could be due to differences in sample selection or poorer health status of the elderly Chinese in Hong Kong.

Client Assessment Protocols (CAPs)

Table 6.35 shows that a mean of 5.6 (SD=3.5) out of the 30 CAPs were triggered by the Chinese-Canadian sample, with a range of 0 to 17 (SD=3.5). The CAP that was triggered the most often was for Preventive Health Measures (by 87.7% people), followed by Instrumental Activities of Daily Living (by 70.8% people). Other commonly triggered CAPs included Social Function (61.3%); Pain (34.0%); Health Promotion (31.1%); and Falls (30.4%). In contrast, no Chinese-Canadians triggered the CAPs for ADL/ Rehabilitation Potential, and Elderly Abuse and Palliative Care. Very few triggered the CAPs for Alcohol Abuse and Hazardous Drinking; Behavior; Depression and Anxiety; Brittle Support System; Pressure Ulcers; Psychotropic Drugs; and Urinary Incontinence. A mean of 10.8 (SD=3.5), with a range of 2 to 21 CAPs were triggered by the Red-Cross Canadian sample. Like the Chinese Canadians, very few Red-Cross Canadians triggered the CAPs for Alcohol Abuse and Hazardous Drinking, Behavior, Elder Abuse, and Palliative Care. Except for the Preventive Health Measures and Environmental Assessment CAPs, the percentage of triggering the CAPs was significantly higher for the Red-Cross Canadian sample than the Chinese-Canadian sample. The CAPs that were triggered by most of the Red-Cross Canadians included Falls (90.7%); IADL (90.5%); Social Function (86.7%); and Health Promotion (79.6%). The Chinese-Canadians in general have fewer problems and lower risks in most of the CAP areas.

Outcome Measures

Percentage distributions for the outcome measures variables are summarized in Table 6.36. For ADL hierarchy, almost all Chinese-Canadians (94.3%) were classified as independent, versus 69.0% of the Red-Cross Canadians, reflecting a significant difference in this measure. For the two IADL outcome measures, significant differences between the two samples were also found. Most Chinese-Canadians had little or no difficulty in the two IADL measures (85.5% and 79.2%), where only 32.9% and 24.8% of the Red-Cross Canadians had little or no difficulty in the same measures. Similarly, more than 90% of the Chinese had little or any problem in stamina versus only about half of the Red-Cross Canadians. A significantly higher proportion (nearly 3 times) of the Chinese-Canadians (82.2%) had no pain symptoms compared to the Red-Cross Canadians (29.0%), and most respondents in both groups had no problem in communication ability. The cognitive performance scores and mood symptoms were significantly different between the two populations, with the Chinese-Canadians having a much higher percentage of respondents in the intact or no problem group. Overall, the Chinese-Canadians experienced significantly better functional and health outcomes than the Red-Cross Canadians.

Health Practice Variables

Significant differences were not found between the Chinese-Canadians and Red-Cross Canadians for all health practice variables (Table 6.37), of which most of the respondents did not present any problems.

Health and Psychosocial Conditions

Percentage distributions for health and psychosocial conditions, and number of diseases are summarized in Tables 6.38 and 6.39. Except for the variable feels lonely, which affected about 40% of the respondents in both the Chinese-Canadian and Red-Cross Canadian samples, the Chinese-Canadians experienced significantly less problems in all of the health and psychosocial conditions than the Red-Cross Canadians. No Chinese-Canadian and very few Red-Cross Canadians (3.4%) had any mental health problems. The psychosocial condition that was most pronounced in the Chinese-Canadians and the Red-Cross Canadians was social isolation, affecting 50.9% and 75.9% of the Chinese and Red-Cross Canadians, respectively. Physical health problem was the second most prevalent health problem for both the Chinese-Canadians (30.2%) and Red-Cross Canadians (71.6%). The mean number of diseases diagnosed for the Chinese-Canadians (1.1) was significantly less than that for the Red-Cross Canadians (5.2). The same pattern was observed for mean values of specific diseases. As a whole, the Chinese-Canadians had less health and psychosocial problems than the Red-Cross Canadians.

Service Utilization Measures

Table 6.40 summarizes the service utilization measures. As the Red-Cross Canadians are recipients of the Red-Cross service, by the definition of formal service used, almost all belonged to the user group. In contrast, the Chinese-Canadians in the Kitchener/Waterloo area rarely utilized any formal services (92.5% were non-users). In terms of hospitalization, the majority of the Chinese (94.3%) and Red-Cross Canadians

(76.7%) were not hospitalized overnight 90 days prior to the assessment date, and no Chinese-Canadians used emergency room service compared to 15.9% of Red-Cross Canadians. Overall, there were significantly higher service utilization rates in the Red-Cross Canadians than the Chinese-Canadians, except for medication review variable, where a similar proportion of the two samples (over 90%) had physicians review their medication.

Dependent Variables

The distributions of the dependent variables are summarized in Tables 6.41 and 6.42. For the binary dependent variables, Table 6.41 indicates that 67.9% of the Chinese-Canadian sample used any type of medicine, 28.3% used TCM, 21.7% combined TCM and Western medicines, 61.3% used Western medicine, 37.7% had polypharmacy that included TCM, and 29.2% had polypharmacy that excluded TCM. A total of 54.7% of the respondents used TCM for non-medical reasons (Table 6.42). For the Red-Cross Canadian sample (Table 6.41), the percentage for use of Western medicine was 95.5, and polypharmacy 83.8%. Significantly higher proportion of the Red-Cross Canadians used medications than the Chinese-Canadians, regardless of the type of medication and socio-demographic stratification. Use of any medicine (TCM or Western) was most common in the Chinese-Canadian sample, followed by use of Western medicine.

For the continuous variables of the number of medications used, Table 6.41 reveals that the Chinese-Canadian sample had a mean of 2.3 of any medicine used. The mean number of TCM used was 0.5, and Western medicines was 1.8. For the Red-Cross

Canadian sample, the mean number of Western medicines used was 5.8, a significantly higher number than the Chinese-Canadian sample.

6.4.3 Bivariate Associations

6.4.3.1 Binary Dependent Variables

Bivariate results for the binary dependent variables and the independent variables are presented in Tables 6.43 to 6.56. Chi-square analysis for statistical differences between the categorical dependent and independent variables were computed. T-test results are presented for the binary dependent variables and continuous independent variables. Statistical significance was based on a cut-off level of $p<0.05$.

Socio-demographic Variables

Analysis of the socio-demographic variables (Table 6.43) revealed that lived with child was the only significant variable associated with use of any medicine, and use of Western medicine in the Chinese-Canadian sample at the bivariate level. No socio-demographic variables were associated with medication use in the Red-Cross Canadian sample.

Cultural Measures

For the categorical cultural measures variables in the Chinese-Canadian sample (Table 6.44), only proficiency in written and spoken English had a significant relationship with use of any medicine, and spoken English was also significantly associated with use of Western medicine. With respect to the continuous measures of culture, lower nativity

score (being more "Chinese") was positively related to use of TCM and combined medication use (see Table 6.45).

Outcome Measures and Number of Diseases

With respect to the continuous health variables, Table 6.46 shows that the outcome measures variables positively associated with use of any medicine in the Chinese-Canadians included stamina, mood symptoms, and pain symptoms. Number of diseases was also positively related to use of any medicine. Only pain symptoms and number of diseases were positively associated with TCM and combined medicine use. Five outcome measures including IADL involvement level, stamina, mood symptoms, and pain symptoms, as well as number of diseases were positively related to use of Western medicine. For polypharmacy that considers TCM as a medicine, stamina, mood symptoms, pain symptoms, and number of diseases indicated positive associations. When TCM was not considered for polypharmacy, only stamina and number of diseases, and IADL capacity measure presented positive associations.

For the Red-Cross Canadian sample, outcome measures associated with Western medicine use were IADL involvement level and pain symptoms, and number of diseases. For polypharmacy, IADL involvement level, cognitive performance scores, and number of diseases revealed significant positive relations.

Health Practice Variables

None of the health practice variables were significantly associated with medication use in both the Chinese and Red-Cross Canadian samples (Table 6.47).

Health and Psychosocial Conditions

Table 6.48 indicates that for the Chinese-Canadian sample, perceived poor health and physical health problems were significantly associated with both any medicine and Western medicine use. No health or psychosocial conditions were found to be related to TCM use. For combined medicine use, perceived poor health, as well as social isolation problems presented significant associations. With respect to polypharmacy (with TCM and without TCM), perceived poor health and physical health problems were found to have significant associations.

Western medicine use in the Red-Cross Canadian sample was significantly associated with feels lonely, where polypharmacy was associated with flare-up of health conditions and feels lonely.

Service Utilization Measures

Table 6.49 reveals that no association with the service utilization measures was found for any medicine or Western medicine use in the Chinese-Canadian sample. Being hospitalized was significantly associated with TCM, combined medicine, and polypharmacy (with or without TCM) use. For the Red-Cross Canadian sample, only medication review was associated with polypharmacy.

6.4.3.2 Continuous Dependent Variables

Bivariate results for the continuous dependent variables and the independent variables are summarized in Tables 6.50 to 6.56. T-test results were presented for the

categorical independent variables, and Pearson's Correlation Coefficient was calculated on continuous independent variables. Statistical significance was based on a cut-off level of $p<0.05$.

Socio-demographic Variables

Table 6.50 reveals that only lived with child was associated with the number of any medication and Western medication used in the Chinese-Canadian sample. The relationship was inverted as living with child lead to less medication use. The same association was not observed with number of Western medicine used in the Red-Cross Canadian sample. Number of Western medication used was found to associate with gender, as females tend to use more medicine than males.

Cultural Measures

No cultural measures were significantly associated with number of medication used of any type for the Chinese-Canadian sample (Tables 6.51 and 6.52).

Outcome Measures and Number of Diseases

Table 6.53 shows that for the Chinese-Canadian sample, stamina, pain symptoms, mood symptoms, and number of diseases were correlated with higher number of any medication used. A higher number of TCM used also correlated with a higher score on pain symptoms and higher number of diseases. For number of Western medication used, ADL hierarchy, IADL-involvement level, stamina, pain symptoms, mood symptoms and number of diseases demonstrated significant correlations. For the Red-Cross Canadian

sample, IADL-involvement level, pain symptoms, cognitive performance scores, and number of diseases were significantly correlated with number of Western medication used.

Health Practice Variables

No health practice variables were significantly associated with number of medication used of any type for both the samples (Tables 6.54).

Health and Psychosocial Conditions

As shown in Table 6.55, perceived poor health and physical health problems were associated with number of any medication and Western medication used in the Chinese-Canadian sample. Only the social isolation problems variable was significantly associated with number of TCM used. For the Red-Cross Canadian sample, perceived poor health, flare-up of health conditions, physical health problems and feels lonely were associated with number of Western medication use.

Service Utilization Variables

As Table 6.56 indicates, hospitalization was associated with both number of any medication and Western medication used in the Chinese-Canadian sample. Formal services used was also associated with number of Western medication and TCM used. For the Red-Cross Canadian sample, only medication reviewed was associated with number of Western medication used, as number of medication used increases with physician review.

6.4.4 Multivariate Analysis

Socio-demographic, health, health practice and service utilization variables associated with medication use in the literatures were examined as potential determinants of medication use. Only significant variables at the bivariate level were tested in multivariate regression models to examine their relative predictive effects on medication use. Prior to selecting the final best fit model, regression diagnostics were performed to assess the fit of models. The hat matrix diagonal, Pearson residual and deviance residual, DFBETAs, C and CBAR, and DIFDEV and DIFCHISQ were examined with the logistic model to detect any extreme points, observations that are not well explained by the model, and ill-fitted observations. With the multilinear regression models, residual plots against the predicted dependent variable, and each of the independent variables, and normal probability plot were constructed to examine independence in the residuals of observations, normal distribution of the residuals, and adequacy of model fit.

Observations with a systematic pattern of deviation were removed from the analysis, and multivariate regression models were re-tested to find the best fit. Several influential outliers were detected in the multivariate models, which will be discussed accordingly.

6.4.4.1 Binary Dependent Variables

Use of Any Medicine

Before reaching the final model, two influential outliers were detected in the Chinese-Canadian sample. After removal, main effects in the final model remained unchanged; however, the level of statistical significance was higher.

The multivariate logistic model for use of any medicine for the Chinese Canadians included 3 main effects with no interaction or curvilinear terms (Table 6.57). Immigrants from other countries (Vietnam, Laos, Cambodia) besides Hong Kong/Taiwan, and China were more likely to use some type of medicine (TCM or Western), as indicated by an odds ratio of 8.71. Coming from China compared with Hong Kong/Taiwan was not significantly associated with use of any medicine. Living with child was found to have a protective effect on using any medicine (OR=0.22). Although borderline significant (p=0.06), after controlling for the lived with child variable, other country of origin became significant. Also, the effect of number of diseases was more prominent. In light of the relative small sample size, lived with child is believed to be an important factor to consider. Higher number of diseases was associated with increased likelihood of using any medicine. As the number of diseases increases by 1, the odds of using any medicine is 17 times greater.

No equivalent dependent variable is available for the Red-Cross Canadian sample.

Use of Traditional Chinese Medicine

One influential outlier was found in the multivariate logistic model of the Chinese-Canadian sample. Upon deleting this observation, no significant changes occurred to the final model, therefore the original model with all variables included was chosen.

The multivariate model for use of TCM contained 3 main effects, health beliefs, pain symptoms, and hospitalized (Table 6.58). For those experience pain symptoms, there is a near 6 times higher the likelihood of using TCM than those without pain. In addition, being hospitalized strongly predicts TCM use, as the odds of using TCM for those that were hospitalized is 15 times greater than those not hospitalized. A curvilinear association between use of TCM and health beliefs was found as shown in Figure 6.1. Differences in use of TCM were the greatest between those who strongly (health belief score = 9) and moderately (health belief score = 7 or 8) believed in TCM. For those who do not believe or moderately believe in TCM, the odds of using TCM is low, and remains constant.

Combined Medicine Use

The final multivariate logistic model for combined medicine use included four main effects, with no interaction terms (Table 6.59). No influential outlier was detected. Lived with child was significantly associated with a reduced likelihood of combining TCM and Western medicine use (OR=0.15). Similar to use of TCM , both experiencing pain symptoms (OR=4.45) and previous hospitalization (OR=15.71) increase the odds of combined medication use. Chinese-Canadian elders who reported social isolation problem

also were more likely to combined TCM with Western medicines, as indicated by an odds ratio of 6.25.

Use of Western Medicine

For the Chinese-Canadian sample, two influential outliers were detected during the first diagnostic test, and one more was found in the second diagnosis. After removal of these 3 outliers, main effects in the final multivariate model for use of Western medicine remained the same (Table 6.60), but the odds ratio for each variable changed. No interaction or curvilinear effects were found.

Similar to use of any medicine and combined medicine use, lived with child presented a significant protective effect towards use of Western medicine (OR=0.14). Those Chinese-Canadian elders not living with their children had 7 times higher the likelihood (OR=1/0.14) of using Western medicine than those living with their children. Chinese-Canadian elders with physical health problems are 11.46 time more likely to use Western medicine than those without physical health problem. Number of diseases was also positively associated with use of Western medicine, as an increase of one disease leads to over 15 times higher the odds of using Western medicine.

When testing the model fit for use of Western medicine in the Red-Cross sample, two influential outliers were removed, and the final multivariate model changed drastically. Pain symptoms, which acted controversially, as a protective factor to use of Western medicine became non-significant after deleting the two outliers. The final multivariate model contains two main effects (Table 6.61). An increase in the cognitive performance

score (indicating more cognitive impairment) had a protective effect to Western medicine use (OR=0.70). This means that those who are cognitively intact are more likely to use Western medicine than cognitively impaired. Number of diseases displays the same determinant effect for use of Western medicine as use of any medicine in the Chinese-Canadian sample, but to a smaller extent. An increase in one disease lead to 2.26 times higher the likelihood of using Western medicine in the Red-Cross Canadian sample.

Polypharmacy

For the Chinese-Canadian sample, two types of polypharmacy were examined. When TCM was considered a form of medicine, and included in the definition of polypharmacy, the final multivariate model contain two main effects (Table 6.62). Those who experienced social isolation problem had a near 4 times the odds of using polypharmacy than those without social isolation problems. Increase in the number of diseases also contributes to greater odds of using polypharmacy (OR=4.49). When TCM was not considered in polypharmacy, only number of diseases was a significant predictor to polypharmacy (OR=3.78), and social isolation problem became non-significant (Table 6.63).

Two influential outliers were found for polypharmacy in the Red-Cross Canadian sample. Upon removal, the final multivariate logistic model changed drastically, with the cognitive performance score variable, and an interaction term between number of diseases and ADL hierarchy losing their significant effects. The final multivariate model includes three main effects (Table 6.64). Both feels lonely and an increase in number of diseases are

associated with an increased odds of polypharmacy , as indicated by odds ratios of 3.51 and 1.64 respectively. Respondents who do not have their medications reviewed by a physician was found to be less likely to use polypharmacy (OR=0.23). Therefore, those whose medication was reviewed has over four times (1/0.23) the likelihood of using polypharmacy.

6.4.4.2 Continuous Dependent Variables

Number of Any Medication Used

Two influential outliers were detected in the multivariate model for the Chinese-Canadian sample. Upon removal of them, the main effects and interaction terms remained significant; however, the R-squared value improved from 0.36 to 0.61. The final multilinear regression model as presented in Table 6.65 includes one main effect and one interaction effect, and explained 61% of the variance. A higher number of diseases is significantly related to increased number of any medication used. An interaction effect between perceived poor health and pain symptoms is illustrated in Figure 6.2. When pain symptoms were not detected, those Chinese-Canadians who perceived poor health used higher number of any medicine (TCM or Western medicine) than those who did not perceive poor health. This finding agrees with that of Guttman (1978) who also found that perceived poor health is associated with medication use. Once pain symptoms were detected and increasing, the number of any medication used in the Chinese-Canadian elders who did not perceive poor health increased as a mean to address the pain symptoms. However, for those who perceived their health as poor, the number of any medication used

decreased as pain symptoms increased. This perhaps can be explained by the fact that perceived poor health leads to social isolation. As pain increases, daily activities are further limited which results in more isolation, both from the general public and the health care system. Therefore, Chinese-Canadian elders who perceived poor health and had more pain might have little contact with health services, hence they do not receive proper medications to address the pain.

Number of Traditional Chinese Medication Used

Four influential outliers were detected in the multilinear regression model for the number of TCM use variable. After deleting these outliers, the independent variables in the model remained the same, but an increase in the R-squared value was observed. Two main effects and one interaction term were found significantly related to number of TCM use (Table 6.66). Those Chinese-Canadian elderly who received formal services used less TCM, indicating an inverse relationship, and those with more pain symptoms used more TCM. The interaction effect between number of diseases and social isolation problem is presented in Figure 6.3. Increased in the number of diseases affected the Chinese-Canadians who are socially isolated most drastically, which resulted in a much higher number of TCM use. For those that were not socially isolated, the effect of number of diseases on the number of TCM was minimal, as only a small increase in the number of TCM use was observed. This shows that TCM use is much more prevalent for those with social isolation problems in an attempt to address the increasing health problems. Health

care providers need to be aware of this behavior in order to prevent inappropriate combined use of medications. This model accounted for 32% of the explained variance.

Number of Western Medication Used

For the Chinese-Canadian sample, three influential outliers were deleted from the multilinear model for the number of Western medication used variable. The resulting final model accounted for more explained variance (56%) and included perceived poor health as an additional main effect (Table 6.67). The three main effects: perceived poor health, physical health problems, and number of diseases were all positively associated with increase Western medication used, with no interactions detected.

For the Red-Cross Canadian sample, two influential outliers were removed. The final multivariate regression model include three variables that were positively related to increase Western medication use: cognitive performance scores, number of diseases and perceived poor health. Hanlon et al. (1996) also found that intact cognition leads to more drug use. This could be because individuals who are cognitively able are better advocates for their needs, therefore, might demand more medications. At the same time, those who are cognitively impaired might be at risk of underuse of needed medications due to the lack of ability to express illness. Medication reviewed again demonstrated an inverse relation to the number of Western medication used. The Red-Cross Canadians receiving physician attention in medication review used more Western medicine than those not having their medication reviewed. This observation was consistent with the findings of using Western medicines.

Table 6.31: Percentage (Frequency) Distributions for Sociodemographic Variables: the Chinese-Canadian, the Red-Cross Canadian, the Chinese-Hong Kong, and the National Population Health Survey Samples

Variables	Chinese-Canadian % (N) (n=106)	RC-Canadian % (N) (n=377)	Chinese-Hong Kong % (N) (n=2032)	NPHS (thousands) % (N) (n=4427)
Gender ***				
men	36.8 (39)	22.5 (83)	34.8 (704)	44.0 (1949)
women	63.2 (67)	77.5 (286)	65.2 (1319)	56.0 (2478)
Age ***				
less than 65	13.2 (14)	11.9 (45)	4.1 (83)	26.6 (1176)
65 to 74	56.6 (60)	21.5 (81)	23.8 (483)	46.5 (2060)
75 and older	30.2 (32)	66.6 (251)	72.1 (1466)	26.9 (1191)
Marital Status ***				
never married	2.2 (2)	8.2 (31)	10.3 (182)	5.8 (256)
married	56.5 (52)	28.2 (106)	27.2 (480)	63.0 (2788)
widowed	39.1 (36)	56.4 (212)	60.9 (1074)	31.2 (1382)
separated	1.1 (1)	1.9 (7)	0.6 (10)	na
divorced	1.1 (1)	4.5 (17)	0.9 (16)	na
other	0.0 (0)	0.8 (3)	0.1 (1)	na
Language ***				
English	2.0 (2)	87.4 (327)	na	52.9 (2343)
French	0.0 (0)	4.3 (15)	na	13.6 (603)
Chinese	84.9 (84)	0.0 (0)	100.0 (2032)	na
Cantonese	46.5 (46)	0.0 (0)	na	na
Putonghua	38.4 (38)	0.0 (0)	na	na
other	13.1 (13)	8.3 (31)	na	20.7 (917)
Education ***				
no schooling	30.4 (28)	1.1 (4)	na	1.2 (51)
8th grade or less	30.4 (28)	42.0 (157)	na	20.9 (927)
9-11 grades	6.5 (6)	18.4 (69)	na	28.3 (1254)
high school	8.7 (8)	16.0 (60)	na	12.7 (564)
technical or trade school	1.1 (1)	4.3 (16)	na	7.5 (331)
some college	7.6 (7)	11.2 (42)	na	4.3 (189)
bachelor's degree	10.9 (10)	4.0 (15)	na	6.4 (283)
graduate degree	4.3 (4)	2.9 (11)	na	1.8 (79)
Living Arrangement ***				
lived alone	9.8 (9)	58.1 (219)	9.5 (171)	28.2 (1247)
lived with spouse only	9.8 (9)	25.5 (96)	11.4 (205)	51.3 (2273)
lived with spouse and other(s)	37.0 (34)	2.9 (11)	0.8 (14)	7.7 (339)
lived with child (not spouse)	39.1 (36)	10.9 (41)	10.8 (193)	3.1 (136)
lived with other(s) (not spouse or children)	4.3 (4)	2.7 (10)	57.1 (1024)	1.0 (46)
lived in group setting with non-relative(s)	0.0 (0)	0.0 (0)	9.8 (176)	na

***, na - see Note on page 150

Table 6.32: Percentage (Frequency) Distributions for the Categorical Measures of Culture (Country of Origin & English Proficiency): the Chinese-Canadian Sample

Variables	% (N)
Country of Origin	
Hong Kong/ Taiwan	34.0 (36)
China	30.2 (32)
other countries	35.8 (38)
Written English	
fluent	9.4 (10)
know some	26.4 (28)
non-fluent	64.2 (68)
Spoken English	
fluent	10.4 (11)
know some	28.3 (30)
non-fluent	61.3 (65)

Table 6.33: Univariate Distributions for the Continuous Measures of Culture (Length of Stay, Nativity, and Health Beliefs Scales): the Chinese-Canadian Sample

	Mean (SD)	Median	First Quartile	Third Quartile
Length of Stay (years)	11.6 (10.2)	11	3	17
Nativity	14.5 (5.3)	12	12	14
Health Beliefs	6.7 (1.9)	7	5.5	9

Table 6.34: Percentage (Frequency) Distributions for Functional Status Measures: the Chinese Canadian, the Red-Cross Canadian, and the Chinese-Hong Kong Samples

Variables	Chinese-Canadian % (N) (n=106)	RC-Canadian % (N) (n=377)	Chinese-Hong Kong % (N) (n=2032)
Memory ***			
OK	89.6 (95)	71.6 (270)	29.9 (494)
problem	10.4 (11)	28.4 (377)	70.1 (1159)
Cognition ***			
independent	95.3 (101)	84.6 (319)	49.0 (822)
modified independence	1.9 (2)	5.8 (341)	47.0 (789)
moderately impaired	1.9 (2)	4.8 (359)	na
severely impaired	0.9 (1)	4.8 (377)	4.1 (68)
Communication			
Expressive ***			
understood by others	99.1 (105)	90.2 (340)	50.9 (870)
usually understood	0.0 (0)	6.4 (364)	26.4 (451)
sometimes understood	0.9 (1)	2.4 (373)	na
rarely/never understood	0.0 (0)	1.1 (377)	22.7 (389)
Receptive ***			
understands	95.3 (101)	86.5 (326)	52.6 (907)
usually understands	3.8 (4)	9.5 (362)	32.5 (561)
sometimes understands	0.0 (0)	3.2 (374)	na
rarely/never understands	0.9 (1)	0.8 (377)	14.9 (257)

***, na - see Note on page 150

(continued...)

Table 6.34: Percentage (Frequency) Distributions for Functional Status Measures: the Chinese-Canadian, the Red-Cross Canadian, and the Chinese-Hong Kong Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)	Chinese-Hong Kong % (N)
IADL - difficulty code ***			
Meal Preparation			
no difficulty	47.2 (50)	28.4 (103)	6.0 (106)
some difficulty	48.1 (51)	43.8 (262)	na
great difficulty	4.7 (5)	27.8 (363)	94.0 (1672)
Ordinary House Work ***			
no difficulty	66.0 (70)	5.0 (18)	33.8 (601)
some difficulty	19.8 (21)	45.3 (182)	na
great difficulty	14.2 (15)	49.7 (362)	66.2 (1177)
Managing Finance ***			
no difficulty	84.6 (88)	44.6 (160)	21.5 (383)
some difficulty	7.7 (8)	25.1 (250)	na
great difficulty	7.7 (8)	30.4 (359)	78.5 (1396)
Managing Medications ***			
no difficulty	79.0 (83)	67.6 (244)	17.7 (315)
some difficulty	11.4 (12)	18.0 (309)	na
great difficulty	9.5 (10)	14.4 (361)	82.3 (1463)
Phone Use ***			
no difficulty	43.4 (46)	82.5 (298)	41.1 (731)
some difficulty	39.6 (42)	10.2 (335)	na
great difficulty	17.0 (18)	7.2 (361)	58.9 (1048)
Shopping ***			
no difficulty	89.6 (95)	18.3 (66)	5.3 (95)
some difficulty	7.5 (8)	31.1 (178)	na
great difficulty	2.8 (3)	50.6 (360)	94.7 (1686)
Transportation ***			
no difficulty	60.4 (64)	26.5 (95)	19.8 (351)
some difficulty	18.9 (20)	27.1 (192)	na
great difficulty	20.8 (22)	46.4 (358)	80.2 (1426)

Table 6.34 (continued...)

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)	Chinese-Hong Kong % (N)
ADL			
Mobility in Bed [ns]			
independent	98.1 (104)	93.1 (349)	na
supervision	0.9 (105)	1.6 (355)	na
limited assistance	0.0 (0)	1.3 (360)	na
extensive assistance	0.0 (0)	1.9 (367)	na
total dependence	0.9 (106)	1.6 (373)	na
Transfer [ns]			
independent	97.2 (103)	88.4 (321)	na
supervision	0.9 (104)	3.6 (334)	na
limited assistance	0.9 (105)	3.9 (348)	na
extensive assistance	0.0 (0)	2.5 (357)	na
total dependence	0.9 (106)	1.7 (363)	na
Locomotion in Home [***]			
independent	97.2 (103)	89.8 (335)	41.5 (738)
supervision	1.9 (2)	4.0 (15)	15.8 (282)
limited assistance	0.0 (0)	2.4 (9)	0.0 (0)
extensive assistance	0.0 (0)	0.8 (3)	0.0 (0)
total dependence	0.9 (1)	2.1 (8)	42.7 (760)
Dressing [***]			
independent	97.2 (103)	78.0 (294)	51.0 (913)
supervision	1.9 (2)	5.6 (21)	0.0 (0)
limited assistance	0.0 (0)	9.5 (36)	26.7 (478)
extensive assistance	0.0 (0)	3.2 (12)	0.0 (0)
total dependence	0.9 (1)	3.7 (14)	22.2 (398)
Eating [***]			
independent	98.1 (104)	95.2 (357)	75.5 (1353)
supervision	0.9 (1)	1.6 (6)	0.0 (0)
limited assistance	0.9 (1)	1.1 (4)	5.7 (102)
extensive assistance	0.0 (0)	0.5 (2)	0.1 (2)
total dependence	0.0 (0)	1.1 (4)	18.6 (333)
Toilet Use [***]			
independent	98.1 (104)	91.0 (343)	33.8 (605)
supervision	0.9 (1)	2.1 (8)	19.7 (353)
limited assistance	0.0 (0)	2.7 (10)	17.4 (311)
extensive assistance	0.0 (0)	1.6 (6)	0.1 (1)
total dependence	0.9 (1)	2.7 (10)	29.0 (519)
Personal Hygiene [***]			
independent	95.3 (101)	84.6 (318)	60.5 (1080)
supervision	2.8 (3)	5.6 (21)	0.1 (1)
limited assistance	0.9 (1)	4.8 (18)	0.0 (0)
extensive assistance	0.0 (0)	1.9 (7)	0.1 (1)
total dependence	0.9 (1)	3.2 (12)	39.3 (702)

Table 6.35: Percentage (Frequency) Distributions for Client Assessment Protocols (CAPs): the Chinese-Canadian and the Red-Cross Canadian Samples

CAPs	Chinese-Canadian % (N)	RC-Canadian % (N)
CAPs Related to **Functional Performance**		
ADL/ Rehabilitation Potential ***	0.0 (0)	12.2 (46)
Instrumental Activities of Daily Living ***	70.8 (75)	90.5 (341)
Health Promotion ***	31.1 (33)	79.6 (300)
Institutional Risk ***	7.5 (8)	51.7 (195)
CAPs Related to **Sensory Performance**		
Communication Disorders ns	26.4 (28)	35.5 (134)
Visual Function **	28.3 (30)	41.6 (157)
CAPs Related to **Mental Health**		
Alcohol Abuse and Hazardous Drinking ns	1.9 (2)	1.1 (4)
Cognition ***	11.3 (12)	33.2 (125)
Behavior ns	1.9 (2)	2.7 (10)
Depression and Anxiety *	3.8 (4)	11.4 (43)
Elder Abuse ns	0.0 (0)	1.1 (4)
Social Function ***	61.3 (65)	86.7 (327)
CAPs Related to **Health Problems/ Syndromes**		
Cardio-Respiratory ***	22.6 (24)	63.1 (238)
Dehydration **	19.8 (21)	33.7 (127)
Falls ***	31.1 (33)	90.7 (342)
Nutrition *	12.3 (13)	22.8 (86)
Oral Health ***	9.4 (10)	33.7 (127)
Pain ***	34.0 (36)	68.4 (258)
Pressure Ulcers ***	2.8 (3)	20.7 (78)
Skin and Foot Condition ***	14.2 (15)	49.9 (188)
CAPs Related to **Service Oversight**		
Adherence ns	8.5 (9)	10.1 (38)
Brittle Support System **	0.9 (1)	8.5 (32)
Medication Management ***	14.2 (14)	59.4 (224)
Palliative Care ns	0.0 (0)	1.1 (4)
Preventive Health Measures: Immunization and Screening ***	87.7 (93)	61.5 (232)
Psychotropic Drugs ***	1.9 (2)	25.5 (96)
Reduction of Formal Services ns	15.1 (16)	17.0 (64)
Environmental Assessment ***	27.4 (29)	5.3 (20)
CAPs Related to **Continence**		
Bowel Management **	13.2 (14)	26.3 (99)
Urinary Incontinence and Indwelling Catheter ***	1.9 (2)	32.4 (122)
Mean (SD) Number of CAPs Triggered ***	5.6 (3.5)	10.8 (3.5)

*, **, ***, ns - see Note on page 150

Table 6.36: Percentage (Frequency) Distributions for Outcome Measures Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)
ADL Hierarchy ***		
1. independent	94.3 (100)	69.0 (247)
2.	1.9 (2)	4.5 (16)
3.	0.9 (1)	7.0 (25)
4.	0.0 (0)	0.8 (3)
5.	0.9 (1)	3.4 (12)
6.	0.0 (0)	4.5 (16)
7.	0.0 (0)	1.1 (4)
8.	0.9 (1)	2.8 (10)
9.	0.0 (0)	3.6 (13)
10. late loss - dependent	0.9 (1)	3.4 (12)
IADL - Capacity Measure ***		
0. no difficulty	41.2 (40)	4.1 (11)
1.	44.3 (43)	28.8 (77)
2.	6.2 (6)	27.3 (73)
3.	2.1 (2)	4.1 (11)
4.	3.1 (3)	6.4 (17)
5.	0.0 (0)	20.6 (55)
6. great difficulty, 3 areas	3.1 (3)	8.6 (23)
IADL - Involvement Level ***		
0. independent	71.7 (76)	5.1 (19)
1.	7.5 (8)	19.7 (14)
2.	6.6 (7)	21.6 (81)
3.	3.8 (4)	14.7 (55)
4.	4.7 (5)	15.2 (57)
5.	0.0 (0)	3.5 (13)
6.	0.0 (0)	13.3 (50)
7.	1.9 (2)	1.9 (7)
8.	0.9 (1)	0.8 (3)
9. performed by others, 3 areas	2.8 (3)	4.3 (16)
Stamina ***		
0. no problem	77.4 (82)	28.3 (101)
1.	15.1 (16)	28.0 (100)
2.	5.7 (6)	25.2 (90)
3.	0.9 (1)	14.0 (50)
4. problem in any 4 areas	0.9 (1)	4.5 (16)

*, *** - see Note on page 150

(continued...)

Table 6.36: Percentage (Frequency) Distributions for Outcome Measures Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)
Pain Symptoms ***		
0. no pain symptom	82.2 (74)	29.0 (85)
1.	11.1 (10)	18.4 (54)
2.	5.6 (5)	17.4 (51)
3. 3 pain symptoms	1.1 (1)	35.2 (103)
Communication *		
0. no problem	95.3 (101)	82.8 (312)
1.	3.8 (4)	9.0 (34)
2.	0.0 (0)	4.5 (17)
3.	0.0 (0)	1.9 (7)
4.	0.0 (0)	0.8 (3)
5.	0.9 (1)	0.5 (2)
6. severe problem, 2 areas	0.0 (0)	0.5 (2)
Cognitive Performance Scores ***		
0. intact	88.7 (94)	65.0 (245)
1.	7.5 (8)	21.0 (79)
2.	0.9 (1)	5.0 (19)
3.	1.9 (2)	4.0 (15)
4.	0.0 (0)	0.3 (1)
5.	0.9 (1)	4.0 (15)
6. very severe impairment	0.0 (0)	0.8 (3)
Mood Symptoms ***		
0. no problem	86.8 (92)	56.2 (204)
1.	7.5 (8)	19.6 (71)
2.	1.9 (2)	8.8 (32)
3.	2.8 (3)	5.2 (19)
4.	0.0 (0)	4.4 (16)
5.	0.9 (1)	2.5 (9)
6.	0.0 (0)	1.7 (6)
7.	0.0 (0)	0.8 (3)
8.	0.0 (0)	0.3 (1)
9.	0.0 (0)	0.0 (0)
10. problem 6-7 days, 5 areas	0.0 (0)	0.6 (2)

Table 6.37: Percentage (Frequency) Distributions for Health Practice Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)
Drinking Problems		
no	98.1 (104)	98.9 (371)
yes	1.9 (2)	1.1 (4)
Number of Days Drinking		
0 day	97.2 (103)	82.9 (310)
1 to 6 days	0.9 (1)	13.9 (52)
7 days or more	1.9 (2)	3.2 (12)
Number of Drinks		
0 drinks	97.2 (103)	82.5 (307)
1 to 2 drinks	2.8 (3)	15.9 (59)
3 drinks or more	0.0 (0)	1.6 (6)
Smoking		
no	96.2 (102)	85.3 (320)
yes	3.8 (4)	14.7 (55)

Table 6.38: Percentage (Frequency) Distributions for Health and Psychosocial Conditions: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)
Perceived Poor Health ***		
no	84.0 (89)	65.8 (246)
yes	16.0 (17)	34.2 (128)
Flare-Up of Health Conditions ***		
no	97.2 (103)	76.3 (286)
yes	2.8 (3)	23.7 (89)
Physical Health Problems ***		
no	69.8 (74)	28.4 (107)
yes	30.2 (32)	71.6 (270)
Feels Lonely ns		
no	63.2 (67)	61.3 (230)
yes	36.8 (39)	38.7 (145)
Mental Health Problems **		
no	100.0 (106)	96.6 (364)
yes	0.0 (0)	3.4 (13)
Social Isolation Problems ***		
no	49.1 (52)	24.1 (91)
yes	50.9 (54)	75.9 (286)

, *, ns - see Note on page 150

Table 6.39: Univariate Distributions for Number of Diseases: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian				Red-Cross-Canadian			
Variables	Mean (SD)	Median	Quartile Q1	Quartile Q3	Mean (SD)	Median	Quartile Q1	Quartile Q3
Number of Diseases[***]	1.1 (1.3)	1	0	2	5.2 (3.2)	5	3	7
Heart/Circulation[***]	0.7 (1.7)	0	0	1	1.9 (1.9)	2	0	3
Neurological[***]	0.0 (0.1)	0	0	0	0.2 (0.6)	0	0	4
Musculo-Skeletal[***]	0.4 (0.6)	0	0	1	1.3 (1.2)	1	1	2
Senses[***]	0.1 (0.2)	0	0	0	0.4 (0.7)	0	0	1
Infections[***]	0.0 (0.1)	0	0	0	0.2 (0.5)	0	0	0
Other Diseases[***]	0.2 (0.6)	0	0	0	1.0 (1.3)	0	0	2

see Note on page 150

Table 6.40: Percentage (Frequency) Distributions for Service Utilization Measures: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	Chinese-Canadian % (N)	RC-Canadian % (N)
Formal Services Used ***		
no	92.5 (98)	0.3 (1)
yes	7.5 (8)	99.7 (376)
Hospitalized ***		
no	94.3 (100)	76.7 (289)
yes	5.7 (6)	23.3 (88)
Emergency Room Visited ***		
no	100.0 (106)	84.1 (317)
yes	0.0 (0)	15.9 (60)
Medication Reviewed ns		
no	8.5 (9)	8.4 (30)
yes	91.5 (97)	91.6 (326)

Note: For Tables 6.31 to 6.40

- * $P < 0.05$ comparing among samples
- ** $P < 0.01$ comparing among samples
- *** $P < 0.0001$ comparing among samples
- ns no statistical significance at $P < 0.05$
- na no data available

Table 6.41: Percentage (Frequency) Distributions and Means (SE) for Medication Use: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian						RC-Canadian	
Variables	Any Med	TCM	Comb. Med	West. Med	Polypharmacy w. TCM	Polypharmacy w.o TCM	West. Med	Polypharmacy
Total Sample								
percentage	67.9	28.3	21.7	61.3	37.7	29.2	95.5	83.8
frequency	72	30	23	65	40	31	360	316
Total Sample								
mean	2.3	0.5	-	1.8	-	-	5.8	-
standard error	0.2	0.1		0.2			0.1	

- not applicable

Table 6.42: Percentage (Frequency) Distributions for TCM Use in the Chinese-Canadian Sample

Variables	% (N)
Use of TCM for Medicinal Reasons	
no	71.7 (76)
yes	28.3 (30)
Use of TCM for Other Reasons	
no	55.8 (58)
yes	44.2 (46)
Any TCM Use	
no	45.3 (48)
yes	54.7 (58)

Table 6.43: Percentage (Frequency) Distributions for Medication Use by Sociodemographic Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian						RC-Canadian	
Variables	Any Med % (N)	TCM % (N)	Comb. Med % (N)	West. Med % (N)	Polypharmacy % (N) w. TCM	Polypharmacy % (N) w/o TCM	West. Med % (N)	Polypharmacy % (N)
Gender								
men	64.1 (25)	25.6 (10)	18.0 (7)	56.4 (22)	33.3 (13)	25.6 (10)	91.6 (76)	77.11 (64)
women	70.2 (47)	29.9 (20)	23.9 (16)	64.2 (43)	40.3 (27)	31.3 (21)	96.5 (276)	85.66 (245)
Age								
less than 65	71.4 (10)	35.7 (5)	21.4 (3)	57.1 (8)	28.6 (4)	21.4 (3)	95.6 (43)	86.7 (39)
65 to 74	63.3 (38)	23.3 (14)	16.7 (10)	56.7 (34)	36.7 (22)	26.7 (16)	95.1 (77)	88.9 (72)
75 and older	75.0 (24)	34.4 (11)	31.3 (10)	71.9 (23)	43.8 (14)	57.5 (12)	95.6 (240)	81.7 (205)
Marital Status								
married	63.5 (40)	27.0 (17)	19.1 (12)	55.6 (35)	36.5 (23)	27.0 (17)	94.3 (100)	84.0 (89)
not married	74.4 (32)	30.2 (13)	25.6 (11)	70.0 (30)	39.5 (17)	32.6 (4)	95.9 (260)	83.8 (227)
Education								
grade 8 or less	65.0 (39)	28.3 (17)	23.3 (14)	60.0 (36)	38.3 (23)	28.3 (17)	91.2 (62)	79.4 (54)
high school/ some post-sec	72.2 (13)	33.3 (6)	22.2 (4)	61.1 (11)	50.0 (9)	38.9 (7)	95.7 (157)	82.9 (136)
college and above	71.4 (20)	25.0 (7)	17.9 (5)	64.3 (18)	28.6 (8)	25.0 (7)	97.2 (141)	86.9 (126)
Lived Alone								
no	67.7 (65)	28.1 (27)	20.8 (20)	60.4 (58)	37.5 (36)	28.1 (27)	94.9 (150)	86.1 (136)
yes	70.0 (7)	30.0 (3)	30.0 (3)	70.0 (7)	40.0 (4)	40.0 (4)	95.9 (210)	82.2 (180)
Lived with Child								
no	84.0 (21)*	32.0 (8)	32.0 (8)	84.0 (21)*	48.0 (12)	40.0 (10)	96.0 (312)	83.4 (271)
yes	63.0 (51)	27.2 (22)	18.5 (15)	54.3 (44)	34.6 (28)	25.9 (21)	92.3 (48)	86.5 (45)

* $P < 0.05$ comparing within variable

Table 6.44: Percentage (Frequency) Distributions for Medication Use by the Categorical Measures of Culture: the Chinese-Canadian Sample

Variables	Any Med % (N)	TCM % (N)	Combined Med % (N)	Western Med % (N)	Polypharmacy % (N)	
					w. TCM	w/o TCM
Country of Origin						
Hong Kong Taiwan	61.1 (22)	27.8 (10)	22.2 (8)	55.6 (20)	30.6 (11)	25.0 (9)
China	59.4 (19)	37.5 (12)	28.1 (9)	50.0 (16)	34.4 (11)	28.1 (9)
Other	81.6 (31)	21.1 (8)	15.8 (6)	76.3 (29)	47.4 (18)	34.2 (13)
Written English						
fluent	60.0 (6)*	20.0 (2)	10.0 (1)	50.0 (5)	20.0 (2)	20.0 (2)
know some	50.0 (14)	21.4 (6)	17.9 (5)	46.4 (13)	28.6 (8)	21.4 (6)
non-fluent	74.5 (52)	32.4 (22)	25.0 (17)	69.1 (47)	44.1 (30)	33.8 (23)
Spoken English						
fluent	63.6 (7)**	18.2 (2)	9.1 (1)	54.6 (6)**	18.2 (2)	18.2 (2)
know some	46.7 (14)	23.3 (7)	16.7 (5)	40.0 (12)	26.7 (8)	20.0 (6)
non-fluent	78.5 (51)	32.3 (21)	26.2 (17)	72.3 (47)	46.2 (30)	35.4 (23)

* $P < 0.05$ comparing within variable

** $P < 0.01$ comparing within variable

Table 6.45: Univariate Distributions for Medication Use by the Continuous Measures of Culture: the Chinese-Canadian Sample

Variables	**Length of Stay** (years) Mean (SE)	**Nativity** Mean (SE)	**Health Beliefs** Mean (SE)
Any Med			
no	11.1 (2.0)	14.6 (0.9)	6.8 (0.3)
yes	11.8 (1.1)	14.2 (0.6)	6.7 (0.2)
TCM			
no	12.4 (1.2)	14.9 (0.7)**	6.6 (0.2)
yes	9.7 (1.5)	12.9 (0.3)	7.0 (0.4)
Western Med			
no	10.2 (1.7)	14.3 (0.7)	6.8 (0.3)
yes	12.4 (1.2)	14.3 (0.7)	6.6 (0.2)
Combined Med			
no	11.8 (1.2)	14.7 (0.6)**	6.6 (0.2)
yes	10.7 (1.9)	12.8 (0.3)	7.1 (0.4)
Polypharmacy w. TCM			
no			
yes	11.3 (1.3)	14.5 (0.6)	6.7 (0.2)
	12.1 (1.4)	13.9 (0.8)	6.7 (0.3)
Polypharmacy w/o TCM			
no			
yes	11.2 (1.2)	14.3 (0.5)	6.7 (0.2)
	12.5 (1.7)	14.3 (1.1)	6.6 (0.4)

** $P < 0.01$ comparing within variable

Table 6.46: Univariate Distributions for Outcome Measures by Medication Use: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	ADL Hierarchy Mean (SE)	IADL-CM Mean (SE)	IADL-IL Mean (SE)	Stamina Mean (SE)	Communi-cation Mean (SE)	Cognitive Performance Mean (SE)	Mood Symptoms Mean (SE)	Pain Symptoms Mean (SE)	# Diseases Mean (SE)
Chinese-Canadian									
Western Med									
no	1.0 (0.0)	0.7 (0.1)	0.5 (0.2)*	0.1 (0.04)**	0.02 (0.04)	0.1 (0.1)	0.02 (0.02)**	0.1 (0.04)**	0.3 (0.1)***
yes	1.4 (0.2)	1.1 (0.2)	1.3 (0.3)	0.5 (0.1)	0.1 (0.1)	0.3 (0.1)	0.4 (0.1)	0.4 (0.1)	1.6 (0.2)
Polypharmacy (w. TCM)									
no	1.0 (0.03)	0.8 (0.1)	0.8 (0.2)	0.2 (0.1)**	0.03 (0.02)	0.1 (0.1)	0.1 (0.04)*	0.1 (0.1)*	0.5 (0.1)***
yes	1.5 (0.3)	2.6 (0.3)	1.4 (0.4)	0.6 (0.2)	0.2 (0.1)	0.3 (0.1)	0.5 (0.2)	0.4 (0.1)	2.1 (0.2)
Polypharmacy (w/o TCM)									
no	1.0 (0.02)	0.7 (0.1)*	0.8 (0.2)	0.2 (0.1)*	0.03 (0.02)	0.2 (0.1)	0.2 (0.1)	0.2 (0.1)	0.6 (0.1)***
yes	1.7 (0.4)	1.4 (0.3)	1.5 (0.4)	0.7 (0.2)	0.2 (0.2)	0.3 (0.2)	0.5 (0.2)	0.4 (0.1)	2.3 (0.3)
Red-Cross Canadian									
Western Med									
no	1.8 (0.5)	3.3 (0.7)	4.4 (0.6)*	0.9 (0.2)	0.6 (0.2)	1.4 (0.4)	1.0 (0.5)	2.6 (0.4)*	2.1 (0.4)***
yes	2.5 (0.1)	2.7 (0.1)	3.1 (0.1)	1.4 (0.1)	0.3 (0.05)	0.7 (0.1)	1.1 (0.1)	1.6 (0.1)	5.3 (0.2)
Polypharmacy									
no	2.3 (0.4)	3.0 (0.3)	3.8 (0.3)*	1.3 (0.2)	0.5 (0.2)	1.1 (0.2)*	1.2 (0.3)	1.4 (0.2)	3.0 (0.3)***
yes	2.4 (0.1)	2.7 (0.1)	3.1 (0.1)	1.4 (0.1)	0.3 (0.04)	0.6 (0.1)	1.0 (0.1)	1.6 (0.1)	5.6 (0.2)

* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

(continued...)

Table 6.46: Univariate Distributions for Outcome Measures by Medication Use: the Chinese-Canadian and the Red-Cross Canadian Samples

Variables	ADL Hierarchy Mean (SE)	IADL-CM Mean (SE)	IADL-IL Mean (SE)	Stamina Mean (SE)	Communi-cation Mean (SE)	Cognitive Performance Mean (SE)	Mood Symptoms Mean (SE)	Pain Symptoms Mean (SE)	# Diseases Mean (SE)
Chinese-Canadian									
Any Med									
no	1.0 (0.0)*	0.7 (0.1)	0.6 (0.3)	0.1 (0.05)**	0.03 (0.03)	0.1 (0.1)	0.03 (0.03)*	0.03 (0.03)**	0.2 (0.1)***
yes	1.3 (1.7)	1.0 (0.2)	1.2 (0.3)	0.4 (0.1)	0.1 (0.1)	0.2 (0.1)	0.3 (0.1)	0.4 (0.1)	1.5 (0.2)
TCM									
no	1.2 (0.1)	1.0 (0.2)	1.2 (0.3)	0.4 (0.1)	0.1 (0.1)	0.2 (0.1)	0.2 (0.1)	0.1 (0.05)**	0.9 (0.1)*
yes	1.2 (0.2)	0.9 (0.2)	0.5 (0.2)	0.3 (0.1)	0.03 (0.03)	0.1 (0.1)	0.4 (0.1)	0.6 (0.2)	1.5 (0.3)
Combined Med									
no	1.2 (0.1)	0.9 (0.2)	1.1 (0.2)	0.3 (0.1)	0.1 (0.1)	0.2 (0.1)	0.2 (0.1)	0.1 (0.05)**	0.9 (0.1)**
yes	1.3 (0.3)	0.9 (0.2)	0.7 (0.3)	0.3 (0.1)	0.04 (0.04)	0.2 (0.1)	0.5 (0.2)	0.8 (0.2)	1.9 (0.3)

* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.47: Percentage (Frequency) Distributions for Medication Use by Health Practice Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian						RC-Canadian	
Variables	Any Med % (N)	TCM % (N)	Comb. Med % (N)	West. Med % (N)	Polypharmacy % (N)		West. Med % (N)	Polypharmacy % (N)
					w. TCM	w o TCM		
Drinking Problems								
no	67.3 (70)	50.0 (1)	21.2 (22)	60.6 (63)	38.5 (40)	29.8 (31)	95.7 (355)	83.8 (311)
yes	100.0 (2)	27.9 (29)	50.0 (1)	100.0 (2)	0.0 (0)	0.0 (0)	100.0 (4)	100.0 (4)
Number of Days Drinking								
0 day	68.0 (70)	28.2 (29)	21.4 (22)	61.2 (63)	37.9 (39)	30.1 (31)	95.2 (295)	83.2 (258)
1 to 6 days	100.0 (1)	100.0 (1)	100.0 (1)	100.0 (1)	100.0 (1)	0.0 (0)	98.1 (51)	84.6 (44)
7 days or more	50.0 (1)	0.0 (0)	0.0 (0)	50.0 (1)	0.0 (0)	0.0 (0)	100.0 (12)	100.0 (12)
Number of Drinks								
0 drinks	68.0 (70)	28.2 (29)	21.4 (22)	61.2 (63)	37.9 (39)	30.1 (31)	95.4 (293)	83.7 (257)
1 to 2 drinks	66.7 (2)	33.3 (1)	33.3 (1)	66.7 (2)	33.3 (1)	0.0 (0)	96.6 (57)	84.8 (50)
3 drinks or more	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	100.0 (6)	83.3 (5)
Smoking								
no	67.7 (69)	28.4 (29)	21.6 (22)	60.8 (62)	39.2 (40)	30.4 (31)	95.9 (307)	84.4 (270)
yes	75.0 (3)	25.0 (1)	25.0 (1)	75.0 (3)	0.0 (0)	0.0 (0)	94.6 (52)	81.8 (45)

Table 6.48: Percentage (Frequency) Distributions for Medication Use by Health and Psychosocial Conditions: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian						RC-Canadian	
Variables	Any Med %(N)	TCM %(N)	Comb. Med %(N)	West. Med %(N)	Polypharmacy %(N) w. TCM	Polypharmacy %(N) w.o TCM	West. Med %(N)	Polypharmacy %(N)
Perceived Poor Health								
no	62.9 (56)**	25.8 (23)	18.0 (16)*	55.1 (49)**	31.5 (28)**	21.4 (19)**	95.1 (234)	81.7 (201)
yes	94.1 (16)	41.2 (7)	41.2 (7)	94.1 (16)	70.6 (12)	70.6 (12)	96.9 (124)	89.1 (114)
Flare-up of Health Conditions								
no	68.0 (70)	28.2 (29)	21.4 (22)	61.2 (63)	37.9 (39)	29.1 (30)	95.5 (273)	81.1 (232)**
yes	66.7 (2)	33.3 (1)	33.3 (1)	66.7 (2)	33.3 (1)	33.3 (1)	96.6 (86)	94.4 (84)
Physical Health Problems								
no	60.8 (45)*	28.4 (21)	18.9 (14)	51.4 (38)***	29.7 (22)**	18.9 (14)***	92.5 (99)	75.5 (84)
yes	84.4 (27)	28.1 (9)	28.1 (9)	84.4 (27)	56.3 (18)	53.1 (17)	96.7 (261)	85.9 (232)
Feels Lonely								
no	67.2 (45)	25.4 (17)	16.4 (11)	58.2 (39)	32.8 (22)	28.4 (19)	93.5 (215)*	80.4 (185)*
yes	69.2 (27)	33.3 (13)	30.8 (12)	66.7 (26)	46.2 (18)	30.8 (12)	98.6 (143)	89.7 (130)
Mental Health Problems								
no	67.9 (72)	28.3 (30)	21.7 (23)	61.3 (65)	37.7 (40)	29.3 (31)	95.6 (348)	84.1 (306)
yes	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	92.3 (12)	76.9 (10)
Social Isolation Problems								
no	65.4 (34)	23.1 (12)	13.5 (7)*	55.8 (29)	28.9 (15)	26.9 (14)	94.5 (86)	83.5 (76)
yes	70.4 (38)	33.3 (18)	29.6 (16)	66.7 (36)	46.3 (25)	31.5 (17)	95.8 (274)	83.9 (240)

* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.49: Percentage (Frequency) Distributions for Medication Use by Service Utilization Measures: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian						RC-Canadian	
Variables	Any Med %(N)	TCM %(N)	Comb. Med %(N)	West. Med %(N)	Polypharmacy %(N) w TCM	Polypharmacy %(N) w o TCM	Western Med %(N)	Polypharmacy %(N)
Formal Services Used								
no	66.3 (65)	30.6 (30)	23.5 (23)	59.2 (58)	36.7 (36)	27.6 (27)	100.0 (1)	100.0 (1)
yes	87.5 (7)	0.0 (0)	0.0 (0)	87.5 (7)	50.0 (4)	50.0 (4)	95.5 (359)	83.6 (315)
Hospitalized								
no	66.0 (66)	26.0 (26)*	19.0 (19)**	59.0 (59)	35.0 (35)*	27.0 (27)*	94.5 (273)	83.0 (240)
yes	100.0 (6)	66.7 (4)	66.7 (4)	100.0 (6)	83.3 (5)	66.7 (4)	98.9 (87)	86.4 (76)
Emergency Care								
no	67.9 (72)	28.3 (30)	21.7 (23)	61.3 (65)	37.7 (40)	29.3 (31)	95.3 (302)	83.6 (265)
yes	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	96.7 (58)	85.0 (51)
Medication Reviewed								
no	77.8 (7)	22.2 (2)	22.2 (2)	77.8 (7)	33.3 (3)	29.9 (29)	90.0 (27)	63.3 (19)***
yes	67.0 (65)	28.9 (28)	21.7 (21)	59.8 (58)	38.1 (37)	22.2 (2)	96.0 (313)	87.1 (284)

* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.50: Univariate Distributions for Number of Medication Used by Sociodemographic Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian			RC-Canadian
Variables	**Any Med** Mean (SE)	**TCM** Mean (SE)	**Western Med** Mean (SE)	**Western Med** Mean (SE)
Gender				
men	1.9 (0.3)	0.3 (0.1)	1.6 (0.3)	5.0 (0.3)**
women	2.4 (0.3)	0.6 (0.2)	1.9 (0.2)	6.0 (0.2)
Age				
less than 65	2.0 (0.6)	0.5 (0.2)	1.5 (0.5)	6.2 (0.4)
65 to 74	2.1 (0.3)	0.4 (0.1)	1.7 (0.2)	6.3 (0.3)
75 and older	2.8 (0.5)	0.7 (0.3)	2.1 (0.4)	5.5 (0.2)
Marital Status				
married	2.1 (0.3)	0.4 (0.1)	1.7 (0.3)	5.8 (0.3)
not married	2.5 (0.4)	0.7 (0.2)	1.8 (0.3)	5.8 (0.2)
Education				
elementary or less	2.4 (0.3)	0.6 (0.2)	1.7 (0.3)	5.7 (0.2)
high school & some post-sec	2.4 (0.5)	0.4 (0.2)	2.0 (0.5)	6.2 (0.2)
college & university	2.0 (0.4)	0.3 (0.1)	1.7 (0.3)	5.1 (0.4)
Lived Alone				
no	2.2 (0.2)	0.5 (0.1)	1.8 (0.2)	5.9 (0.2)
yes	2.8 (1.0)	1.0 (0.6)	1.8 (0.5)	5.6 (0.2)
Lived with Child				
no	3.1 (0.5)*	0.6 (0.3)	2.5 (0.4)*	5.8 (0.2)
yes	2.0 (0.2)	0.5 (0.1)	1.6 (0.2)	5.8 (0.4)

* $P < 0.05$ comparing within variable

** $P < 0.01$ comparing within variable

Table 6.51: Univariate Distributions for Number of Medication Used by the Categorical Measures of Culture: the Chinese-Canadian Sample

Variables	**Any Med** Mean (SE)	**TCM** Mean (SE)	**Western Med** Mean (SE)
Country of Origin			
Hong Kong/ Taiwan	2.0 (0.4)	0.4 (0.1)	1.6 (0.3)
China	2.2 (0.5)	0.7 (0.2)	1.6 (0.4)
other countries	2.6 (0.3)	0.5 (0.2)	2.1 (0.3)
Written English			
fluent	1.6 (0.6)	0.2 (0.1)	1.5 (0.6)
know some	1.6 (0.4)	0.5 (0.2)	1.1 (0.3)
non-fluent	2.6 (0.3)	0.6 (0.1)	2.1 (0.2)
Spoken English			
fluent	1.5 (0.5)	0.2 (0.1)	1.5 (0.5)
know some	1.5 (0.4)	0.5 (0.2)	1.0 (0.3)
non-fluent	2.8 (0.3)	0.6 (0.1)	2.2 (0.3)

Table 6.52: Pearson's Correlation Coefficient for Number of Medication Used by the Continuous Measures of Culture: the Chinese-Canadian Sample

Variables	Any Med	TCM	Western Med
Length of Stay (year)	0.046	-0.100	0.092
Nativity	-0.075	-0.143	-0.012
Health Beliefs	-0.062	-0.027	-0.015

Table 6.53: Pearson's Correlation Coefficient for Number of Medication Used by Outcome Measures and Number of Diseases: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian			Red-Cross Canadian
Variables	**Any Med**	**TCM**	**Western Med**	**Western Med**
ADL Hierarchy	0.146	-0.038	0.199*	-0.080
IADL - Capacity Measure	0.152	-0.006	0.188	-0.034
IADL - Involvement Level	0.157	-0.062	0.216*	-0.126*
Stamina	0.299**	-0.058	0.389***	-0.023
Pain Symptoms	0.382***	0.350***	0.300**	0.138*
Communication	0.106	0.023	0.115	-0.082
Cognitive Performance Scores	0.084	0.016	0.077	-0.131**
Mood Symptoms	0.259***	0.131	0.245**	0.087
Total Number of Diseases	0.682***	0.293**	0.656***	0.515***

* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.54: Univariate Distributions for Number of Medication Used by Health Practice Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian			RC-Canadian
Variables	**Any Med** Mean (SE)	**TCM** Mean (SE)	**Western Med** Mean (SE)	**Western Med** Mean (SE)
Drinking Problems				
no	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.8 (0.1)
yes	1.5 (0.5)	0.5 (0.5)	1.5 (0.5)	6.0 (1.1)
Number of Days Drinking				
0 day	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.8 (0.2)
1 to 6 days	3.0 (-)	1.0 (-)	2.0 (-)	5.8 (0.4)
7 days or more	0.5 (0.5)	0.0 (0)	0.5 (0.5)	6.3 (0.6)
Number of Drinks				
0 drinks	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.7 (0.2)
1 to 2 drinks	1.3 (0.9)	0.3 (0.3)	1.0 (0.6)	5.8 (0.3)
3 drinks or more	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	6.0 (1.1)
Smoking				
no	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.8 (0.2)
yes	1.0 (0.4)	0.3 (0.3)	1.0 (0.4)	5.7 (0.4)

(-) no variance as there was only one respondent in this category

Table 6.55: Univariate Distributions for Number of Medication Used by Health and Psychosocial Conditions: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian			RC-Canadian
Variables	**Any Med** Mean (SE)	**TCM** Mean (SE)	**Western Med** Mean (SE)	**Western Med** Mean (SE)
Perceived Poor Health				
no	1.8 (0.2)***	0.4 (0.1)	1.3 (0.2)***	5.4 (0.2)**
yes	4.8 (0.6)	0.8 (0.4)	4.0 (0.5)	6.6 (0.2)
Flare-up of Health Conditions				
no	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.4 (0.2)***
yes	2.7 (1.8)	0.7 (0.3)	2.3 (1.9)	7.0 (0.3)
Physical Health Problems				
no	1.7 (0.2)***	0.5 (0.1)	1.2 (0.2)***	4.9 (0.3)***
yes	3.6 (0.5)	0.5 (0.2)	3.0 (0.4)	6.1 (0.2)
Feels Lonely				
no	2.1 (0.3)	0.4 (0.1)	1.7 (0.2)	5.4 (0.2)***
yes	2.6 (0.4)	0.7 (0.2)	1.8 (0.3)	6.3 (0.2)
Mental Health Problems				
no	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.8 (0.1)
yes	0.0 (-)	0.0 (-)	0.0 (-)	5.4 (0.8)
Social Isolation Problems				
no	1.9 (0.3)	0.3 (0.1)*	1.7 (0.3)	5.8 (0.3)
yes	2.6 (0.3)	0.8 (0.2)	1.9 (0.2)	5.8 (0.2)

(-) no variance as there was no respondent in this category
* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.56: Univariate Distributions for Number of Medication Used by Service Utilization Variables: the Chinese-Canadian and the Red-Cross Canadian Samples

	Chinese-Canadian			RC-Canadian
Variables	**Any Med** Mean (SE)	**TCM** Mean (SE)	**Western Med** Mean (SE)	**Any Med** Mean (SE)
Formal Services Used				
no	2.2 (0.2)	0.5 (0.1)***	1.7 (0.2)*	7.0 (-)
yes	3.1 (0.8)	0.0 (0)	3.1 (0.8)	5.7 (0.1)
Hospitalized				
no	2.1 (0.2)*	0.5 (0.1)	1.7 (0.2)*	5.6 (0.2)
yes	4.5 (1.0)	1.0 (0.4)	3.5 (0.8)	6.2 (0.3)
Emergency Room Visited				
no	2.3 (0.2)	0.5 (0.1)	1.7 (0.2)	5.7 (0.2)
yes	0.0 (-)	0.0 (-)	0.0 (-)	5.9 (0.4)
Medication Reviewed				
no	1.8 (0.4)	0.2 (0.1)	1.6 (0.4)	4.5 (0.1)**
yes	2.3 (0.2)	0.5 (0.1)	1.8 (0.2)	5.8 (0.1)

(-) no variance
* $P < 0.05$ comparing within variable
** $P < 0.01$ comparing within variable
*** $P < 0.0001$ comparing within variable

Table 6.57: Multiple Logistic Regression for Use of Any Medicine in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Country of Origin				
Hong Kong/Taiwan	0.00		1.00	
China	0.35	0.71	1.42	0.35, 5.75
other countries	2.16	0.82	8.71	1.76, 43.18
Lived with Child				
no	0.00		1.00	
yes	-1.53	0.82	0.22	0.04, 1.08
Number of Diseases	2.84	0.69	17.09	4.38, 66.64

Table 6.58: Multiple Logistic Regression for Use of Traditional Chinese Medicine in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Health Beliefs	-3.00	1.09		
Health Beliefs Squared	0.25	0.09	see	Figure 7.1
Pain Symptoms				
no	0.00		1.00	
yes	1.76	0.50	5.82	2.20, 15.41
Hospitalized				
no	0.00		1.00	
yes	2.71	1.32	15.10	1.13, 202.58

Table 6.59: Multiple Logistic Regression for Combined Medicine Use in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Lived with Child				
no	0.00		1.00	
yes	-1.87	0.77	0.15	0.03, 0.70
Pain Symptoms	1.49	0.48	4.45	1.73, 11.41
Social Isolation Problems				
no	0.00		1.00	
yes	1.83	0.81	6.25	1.28, 30.62
Hospitalized				
no	0.00		1.00	
yes	2.75	1.30	15.71	1.23, 200.25

Table 6.60: Multiple Logistic Regression for Use of Western Medicine in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Lived with Child				
no	0.00		1.00	
yes	-1.94	0.82	0.14	0.03, 0.71
Physical Health Problems				
no	0.00		1.00	
yes	2.44	0.86	11.46	2.11, 62.31
Number of Diseases	2.71	0.63	15.07	4.41, 51.52

Table 6.61: Multiple Logistic Regression for Use of Western Medicine in the Red-Cross Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Cognitive Performance Score	-0.36	0.18	0.70	0.49, 0.99
Number of Diseases	0.81	0.20	2.26	1.52, 3.37

Table 6.62: Multiple Logistic Regression for Polypharmacy (including TCM) in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Social Isolation Problems				
no	0.00		1.00	
yes	1.35	0.57	3.85	1.25, 11.85
Number of Diseases	1.50	0.31	4.49	2.47, 8.19

Table 6.63: Multiple Logistic Regression for Polypharmacy (excluding TCM) in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Number of Diseases	1.33	0.27	3.78	2.20, 6.48

Table 6.64: Multiple Logistic Regression for Polypharmacy in the Red-Cross Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	Odds Ratio	95% C.I.
Feels Lonely				
no	0.00		1.00	
yes	1.26	0.42	3.51	1.54, 8.02
Number of Diseases	0.50	.09	1.64	1.36, 1.98
Medication Reviewed				
yes	0.00		1.00	
no	-1.47	0.49	0.23	0.09, 0.60

Table 6.65: Multiple Linear Regression for Number of Any Medication Used in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	p-Value
Pain Symptoms	1.08	0.29	0.0003
Number of Diseases	0.94	0.14	0.0001
Perceived Poor Health			
no	0.00	0.00	0.0000
yes	1.85	0.57	0.0019
Pain Symptoms x Perceived Poor Health	-1.81	0.70	0.0115
	see	Figure 7.2	

R-Square	F-Value	degrees of freedom	Prob>F
0.61	31.44	4	0.0001

Table 6.66: Multiple Linear Regression for Number of Traditional Chinese Medication Used in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	p-Value
Formal Service Used			
no	0.00		
yes	-0.91	0.35	0.01
Pain Symptoms	0.33	0.17	0.05
Social Isolation Problems	-0.05	0.25	0.85
Total Number of Diseases	0.05	0.10	0.59
Social Isolation Problems x Number of Diseases	0.44	0.14	0.003
	see Figure 7.3		

R-Square	F-Value	degrees of freedom	Prob>F
0.32	8.88	5	0.0001

Table 6.67: Multiple Linear Regression for Number of Western Medication Used in the Chinese-Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	p-Value
Perceived Poor Health			
no	0.00		
yes	0.99	0.45	0.03
Physical Health Problem	0.84	0.33	0.01
Number of Diseases	0.75	0.12	0.0001

R-Square	**F-Value**	**degrees of freedom**	**Prob>F**
0.56	41.84	3	0.0001

Table 6.68: Multiple Linear Regression for Number of Western Medication Used in the Red-Cross Canadian Sample

Independent Variables	Parameter Estimates	Standard Error	p-Value
Cognitive Performance Score	-0.28	0.10	0.007
Number of Diseases	0.42	0.04	0.0001
Perceived Poor Health	0.79	0.27	0.003
Medication Reviewed			
yes	0.00		
no	-0.96	0.45	0.03

R-Square	**F-Value**	**degrees of freedom**	**Prob>F**
0.30	36.37	4	0.0001

Table 6.69: Summary of Main Effects of Selected Socio-demographic, Cultural, Health, Psychosocial and Service Utilization Variables in the Multiple Logistic Regression Model

	Chinese-Canadian						Red-Cross Canadian	
Variables	Any Med	TCM	Comb. Med	Western Med	Polypharmacy w. TCM	Polypharmacy w/o TCM	Western Med	Polypharmacy
1. Country of origin	+							
2. Lived with Child	-		-	-				
3. Health Beliefs		+						
4. Pain Symptoms		+	+					
5. Physical Health Problem				+				
6. Number of Diseases	+			+	+	+	+	+
7. Feels Lonely								+
8. Cognitive Performance Scale							-	
9. Social Isolation Problem			+		+			
10. Medication Reviewed								+
11. Hospitalized		+	+					

Note: The + and - signs indicate the presence and direction of a significant main effect.

Table 6.70: Summary of Main and Interactive Effects of Selected Socio-demographic, Cultural, Health, Psychosocial and Service Utilization Variables in the Multiple Linear Regression Model

	Chinese-Canadian			Red-Cross Canadian
Variables	Any Med	TCM	Western Med	Western Med
1. Perceived Poor Health	• (3)		+	+
2. Physical Health Problem			+	
3. Pain Symptoms	• (1)	+		
4. Number of Diseases	+	• (6)	+	+
5. Cognitive Performance Scale				-
6. Social Isolation Problem		• (4)		
7. Formal Service Used		-		
8. Medication Reviewed				+

Note: The + and - signs indicate the presence and direction of a significant main effect, and the bullet signs indicate the presence of a significant interaction effect, with the variable whose row number corresponds to the number in the brackets.

Figure 6.1: Adjusted Odds Ratio for TCM Use by Health Beliefs, the Chinese-Canadian Sample (Q1-Q4)

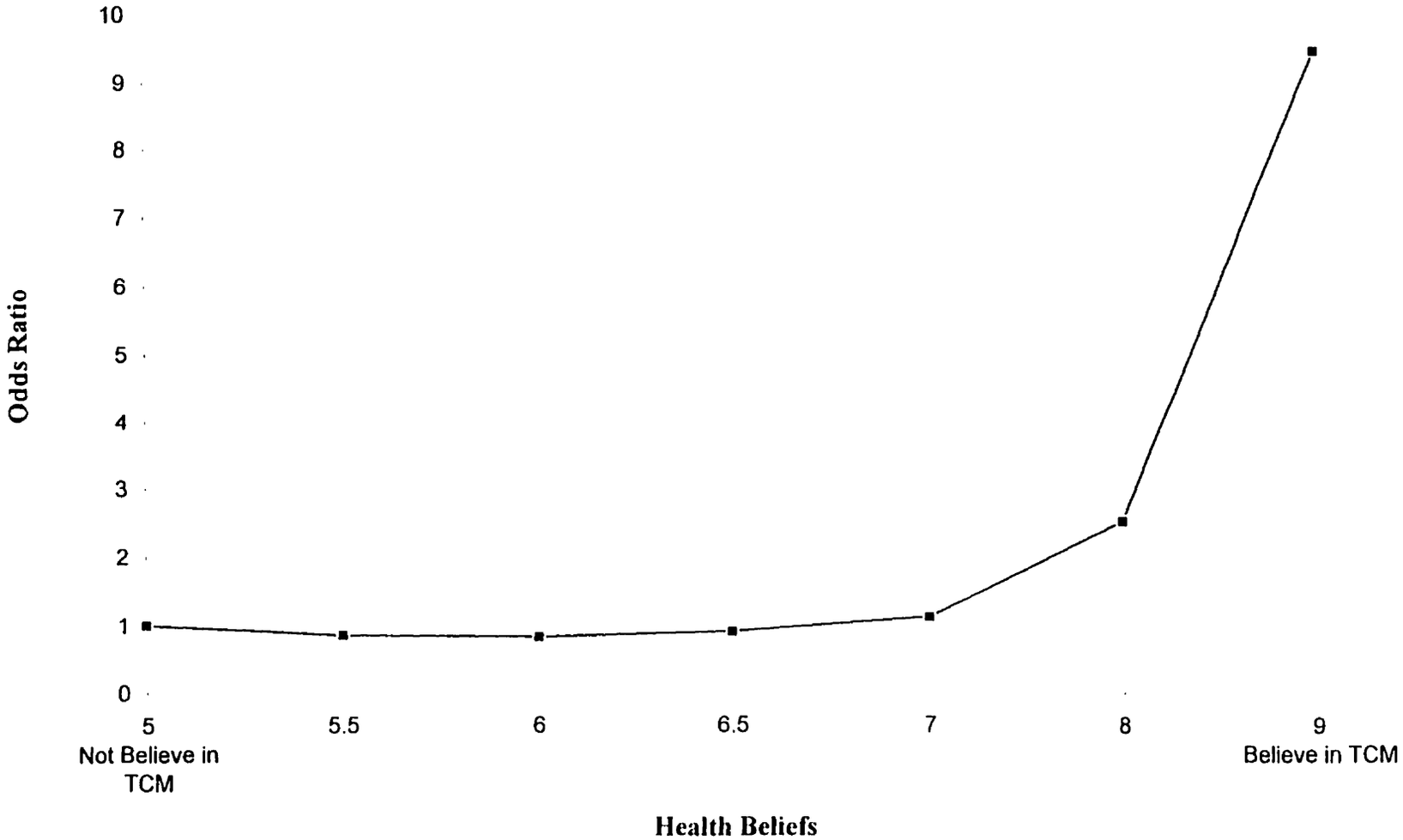


Figure 6.2: Predicted Number of Any Medication Used (TCM or Western Medicines) by the Interaction Effect of Pain and Perceived Health, the Chinese-Canadian Sample

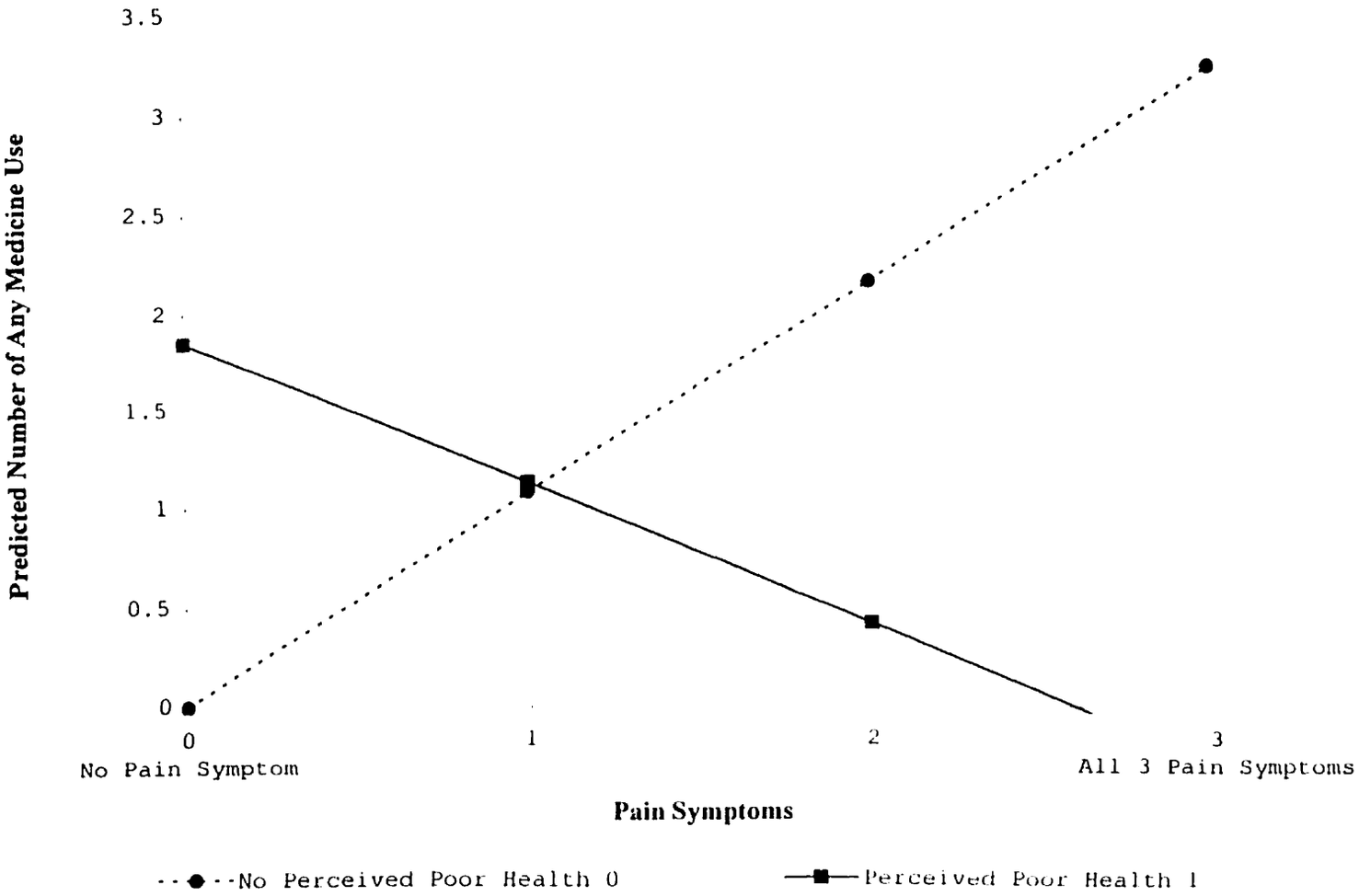
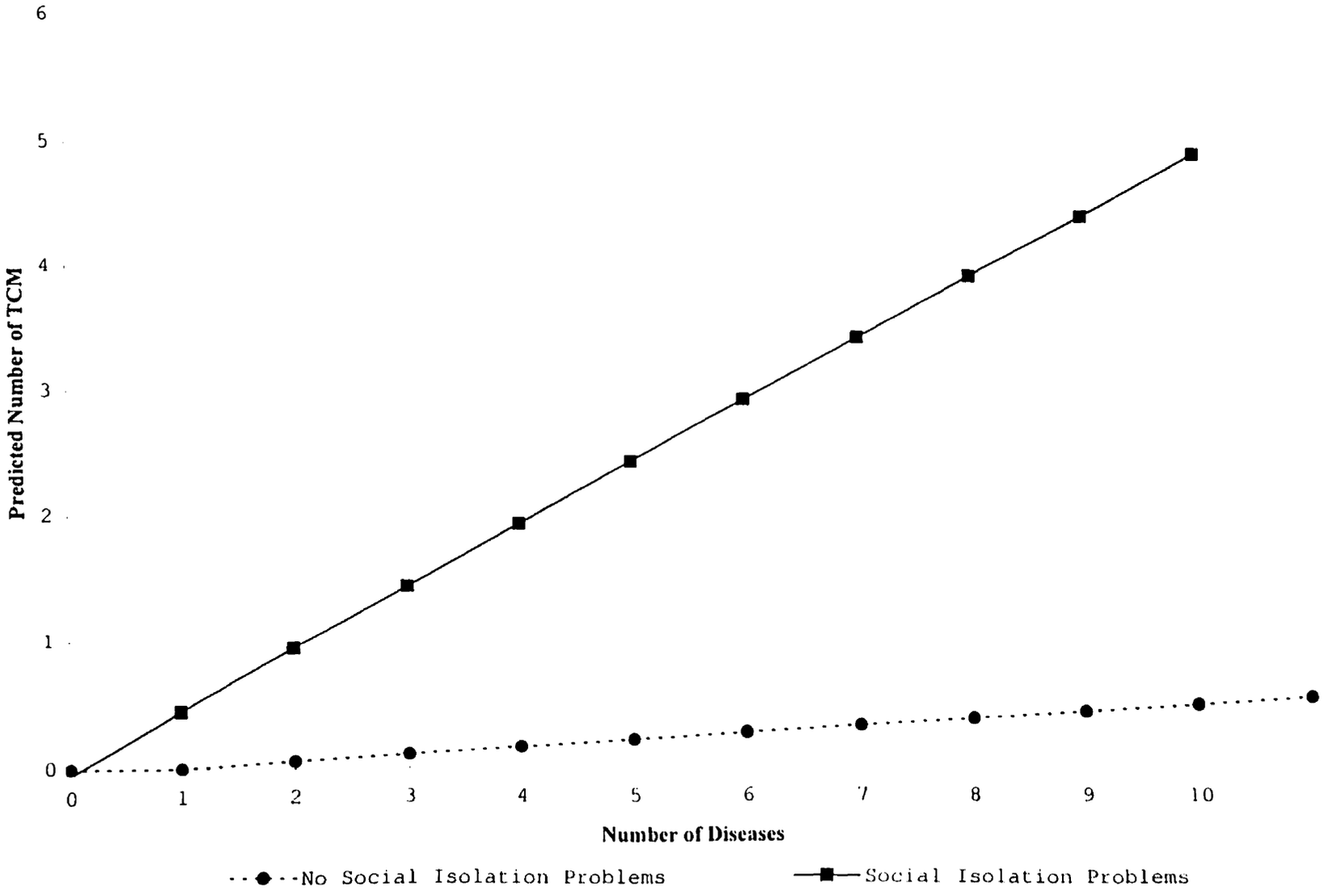


Figure 6.3: Predicted Number of Traditional Chinese Medication Used by the Interaction Effects of Social Isolation Problems and Number of Diseases, Chinese-Canadian Sample



6.5 Discussion

6.5.1 Health Variations by Culture

Based on the results of the sociodemographic distributions, the Chinese-Canadian sample was younger than the Red-Cross Canadian and the Chinese-Hong Kong samples, but was similar in age as the general Canadians. On the other hand, the Chinese-Canadians generally had less formal schooling was than the Red Cross and the general Canadians. For example, 61% of them had less than grade 8 education compared with 43% of the Red-Cross Canadian and 22.1% of the NPHS samples. There was, however, a similar percentage who had technical school or higher education among Chinese-Canadians (23.9%), Red Cross Canadians (23.2%), and general Canadians (20.0%). This bimodal distribution for education level in the Chinese-Canadians reflects their immigration patterns, with four different groups of people: those who came as construction workers on the Canadian Pacific Railway; refugees from Southeast Asian countries, Mainland China and Vietnam; those who came recently to join their children who are technical workers and professionals; and those who chose to retire in Canada (Employment and Immigration Canada, 1985; Lai & Yue, 1990). These Chinese immigrants vary greatly in their financial status, health, and education level. More Chinese-Canadians were married than the other two samples. Again reflecting their immigration reasons, most Chinese-Canadians lived with their children (76.1%), as compared to only 13.8% of the Red Cross Canadians, 11.6% of the Chinese-Hong Kong sample, and 10.8% of the general Canadians. This finding is similar to that of Lubben and Becerra's (1987), and they explained that the need to live with children may be culturally, economically and health based. In this study, the

living with child arrangement is probably a function mainly of immigration and social needs than health needs, as the Chinese-Canadian elderly were in general younger and healthier than the other two samples. There is an interdependent relationship as most elderly Chinese need their children for help in instrumental daily activities, and in turn they provide help in child care. Although living with children enables easy informal care provision, it is important to consider the health and social consequences of factors such as reduced autonomy in the elderly and burden on their children. While the Chinese-Canadian elderly may gain access to informal resources, they may also give up the ability to make decisions with complete independence.

In comparison, the Chinese-Canadians were healthier than the Red-Cross Canadians and the Chinese-Hong Kong as measured by functional status (Table 6.34). This is somewhat expected considering that a general sample of Chinese-Canadians is compared with the two groups already receiving needed formal services. In addition, immigrants are often healthier as a result of selective immigration where by those in good health are more likely to emigrate and join their families (Kitano, Lubben, Berkanovic, Chi, Chen and Zhu, 1994). It should be noted that since the Chinese-Canadian sample is a near census of the Kitchener/Waterloo area, the differences in health should not be a result of response or selection bias in the sampling procedure. Indeed, all Chinese receiving health services appear to have been included (from physician and Home Care caseloads). These health differences probably reflect real differences in health rather than methodological artifacts. Different explanation than selective immigration is that non-healthy individuals might have moved *away* to larger cities with more cultural/language sensitive care (children of a large

proportion of the Chinese-Canadians who moved away prior to sampling stated ill health was the reason for leaving).

Although both belong to the receiving-formal-services group, the Red-Cross Canadians and the Chinese-Hong Kong demonstrated significant differences in health status. As exemplified in areas of ADL and IADL abilities, the Chinese-Hong Kong experienced a great deal more functional problems (see Table 6.34). Chi (1995) and Ho and Woo (1994) also provided evidence in support of this finding. When the health care system in Hong Kong is considered, it is not surprising that this disadvantage in health is evident in the Chinese-Hong Kong. For example, there are very few geriatric outpatient services in Hong Kong. Elderly patients in Hong Kong often only see general practitioners, who rarely make referrals to the limited geriatric services available. There is also a serious shortage in geriatricians in Hong Kong, with less than 100 geriatricians to serve over 500,000 elderly persons. As a result of a severe shortage of community-based services, many elderly individuals receive no continuing community care after being discharged from hospitals. In addition, the education status of the Chinese-Hong Kong is relatively low, and their health practices are relatively poor (Chi and Lee, 1991).

Further comparisons in CAPs triggered, outcome measures, health practice behaviors, health and psychosocial conditions, and number of diseases (Tables 6.35 to 6.39) reflected that, the Chinese-Canadians are in better health status than the Red-Cross Canadians. The relative differences in health, however, should not be interpreted as a sign of uniformly good health, because there are numerous health concerns in the Chinese-Canadian population which require special attention. The Chinese-Canadians had a much

higher prevalence of triggering the CAP for preventive health practices than the Red-Cross Canadians (Table 6.35) despite being younger and in better health. This CAP was triggered because of the low prevalence of practicing preventive medicine, especially in breast examination or mammography in women. This is consistent with Lai and Yue's (1990) report that Chinese people usually think of themselves as ill only when symptoms are evident. Since the primary goal is to get rid of symptoms, the concepts of chronic illness, and prevention are not clearly understood and appreciated. Therefore, education in preventive medicine is necessary for the Chinese to minimize future health risks, which will be discussed later.

The Chinese-Canadians also had a high prevalence of triggering CAPs for instrumental activities of daily living (IADL) (70.8%), social function (61.3%), pain (34.0%), falls (31.1%), environmental assessment (27.4%), and medication management (14.2%). The high prevalence of IADL CAP triggered may be explained, at least in part, by language barriers that impede phone use, shopping, and transportation. Even though almost 95% of the participants were physically and functionally unimpaired, language and cultural barriers limited their IADL performance, which resulted in dependency and reduced social interaction. This may also explain the relatively high percentage of respondents triggering the social function CAP, which is comprised of participation in social activities, being left alone during the day, feeling lonely, and not being able to interact with others at ease. The environmental assessment CAP triggering is primarily related to poor bathroom and kitchen conditions. Education in home safety is needed to prevent more serious health consequence such as falls. The falls and pain CAPs which are

closely related to medication management CAP, were all triggered frequently in the Chinese-Canadians. Considering polypharmacy and combined medication use is common in the Chinese-Canadians (37.7% and 21.7%, respectively), factors related to medication use in this population must be understood.

Similar to the findings of Majumdar et al. (1995), the Chinese-Canadians used few formal services (such as home care) and were rarely hospitalized. This could be because of the relatively healthier population, or perceived service barriers. These barriers may include lack of knowledge regarding available resources, cost, lack of transportation, fear of contact with unfamiliar cultures and language, and that service use could lead to loss of independence (Evans and Cunningham, 1996). Contrary to Liu and Yu's report (1985) that emergency room care was one of the few services where Asian/Pacific Americans have a relatively high rate of inappropriate use compared with the general population, the rate of emergency room visits in the Chinese-Canadians was zero. This finding was supported by Wen, Goel and Williams (1996) who found lower emergency room use rate in ethnic cultural groups than the general Canadian population. The variations in reported service utilization rate could be due to the different health care and insurance systems between Canada and the US. It should be noted that there is a large proportion of a sub-group of Chinese-Canadians triggering 10 or more CAPs (15.1%). Although their health status are comparable to a group of frail elderly who are receiving formal care in the general population, these Chinese-Canadian elderly persons are greatly under-represented in formal services used.

6.5.2 Medication Use by Culture

Previous studies on cultural variations in medication use are almost non-existent. A few studies looked at racial differences in the number of medications used, which suggested that "whites" are higher users of medications than "non-whites" (Kotzan, Carroll and Kotzan, 1989; Brown et al., 1995; Hershman et al., 1995; Fillenbaum et al., 1993). This racial grouping neglects to consider important cultural differences in medication use. Further, the gross aggregation of racial groups is of little use in understanding medication taking behavior of any particular cultural group. In the present study, the percentage of individuals using any form of medicine, and the mean number of different forms of medicine was higher in the Red-Cross Canadians than the Chinese-Canadians, possibly reflecting differences in health status (Table 6.41).

Cultural and social factors which are rarely examined in studies of determination of medication use were found to be significant with the Chinese-Canadian sample. Country of origin from Vietnam and other South East Asian countries was positively related to an increased odds of using any medicine. This is not surprising, because immigrants from these countries are mostly refugees. Often disadvantaged even prior to departure, refugees endured perilous escapes, illness, deprivation and lengthy stays in overcrowded and unsanitary refugee camps before arriving in the host country. Many have deteriorated under difficult living conditions, which reduced their physical health and well-being to its lowest level (Lai and Yue, 1990). This poor health status naturally leads to an increase likelihood of using medications.

Living with a child was found to be a protective factor to using any, combined, and Western medicines for the Chinese-Canadians only (Table 6.69). Although many studies suspect that intact and cohesive extended family structures providing strong social support might be diminishing, Kitano et al (1994) reported that this strong family interaction remains for elderly immigrants, and they are more likely to live with their children than general Americans. In the immigrant Chinese, increasing dependency of elders is often the accepted norm (Evans and Cunningham, 1996). Therefore, for those elderly Chinese-Canadians living with their children, decisions in using medications might be influenced by their children. As younger adults are often more informed about health and medication complications, their opinions might guide elderly parents toward less medication use. Further, this readily available informal support might be helpful in preventing use of medications as the first avenue to resolving health concerns.

Although health beliefs played a determinant role in TCM use, only those who strongly believed in TCM had an increased odds of using TCM (Figure 6.1). Other factors that more strongly predicted the odds of using TCM and combined medication (using TCM and Western medicines jointly), and the number of any medication used (using TCM or Western medicines) were pain symptoms and hospitalization (Tables 6.69 & 6.70). These two variables, interestingly, were significant only for medication use that involves TCM. Chinese-Canadians experiencing pain had nearly 6 and 5 times the odds of using TCM and combined medicine, respectively (Tables 6.58 and 6.59). This is not surprising because the Chinese use medications mainly for symptomatic relief (Lai & Yue, 1990; Lum, 1995). Therefore, if pain symptoms are detected, increased medication use will result. This

finding contradicted that of Lister (1977) who reported that in response to pain, fewer Chinese made demands on health care staff or requested medication than did the Caucasians and Hawaiians. Lister's finding seemed to suggest that Chinese have a much higher tolerance of pain, and they do not require medication to deal with pain. In contrast, the present study found that instead of the perceived stoic nature, Chinese elderly merely use a different medication system, that might be unknown to the general health care providers, to deal with pain. Instead of requesting Western medicine (no relationship was detected between pain and Western medicine usein the multivariate logistic model), they resort to TCM. Poliakoff (1993) reported that individuals raised in the Chinese culture are reluctant to use analgesics because of a fear of being out of control, and they believe that pain killers cause sweating and loss of body fluid which induces weakness. This belief will naturally direct them to using alternate treatment methods such as TCM. These patients are often hesitant in revealing these alternate care approaches to Western practitioners for fear of being ridiculed or discouraged. If symptoms are not relieved quickly, a combined use of both Western and TCM may follow (reflected by the OR of 4.45).

Prior hospitalization was also found to be correlated only with increased odds of TCM and combined medication used in the Chinese-Canadian sample (Table 6.69). Those who were hospitalized were 15 times more likely to use TCM or combined medicines. This relationship was not significant with Western medication used. Those who have been hospitalized are likely to have experienced more severe illness. Evans and Cunningham (1996), and Montbriand (1995) reported that at times of stress and severe illness, patients often retreat to their cultural roots, and rely on early learned ideas and belief for treatment.

At the same time, they might turn to these traditional approaches because they find Western medicine ineffective (Hamilton, 1996). Hamilton (1996) also pointed out that most Western physicians are trained in basic sciences like biochemistry and anatomy, which assume that human bodies are the same and standardized approaches are taken. Consequently, cultural and social factors are neglected and "the person" is lost in this approach. Patients in turn are reluctant to communicate their alternate treatment methods as evident in Montbriand's study (1993) that 75% of cancer patients did not tell the doctors that they are using an alternate therapy.

The above findings are of serious concerns, not necessarily because Chinese-Canadians use an alternate form of treatment approach, but that they might be unsatisfied and their needs are not being met. Further, many important interaction effects were detected in medication use. Social isolation was found to interact significantly with number of diseases in predicting TCM use, and perceived poor health interacted with pain symptoms (Figures 6.2 and 6.3). These interactions complicated the medication use picture. When social isolation is experienced, a much higher number of TCM are being used as the Chinese elderly have more diseases. More seriously, health care providers are possibly unaware of this dual medication approach resulting in higher risks of adverse drug reactions, medication-medication interactions, non-compliance to Western medication used, and ineffective treatment. Being socially isolated and not receiving appropriate health care assistance clearly places an individual at risk of exacerbated health problems.

Other social factors like age, gender, marital status and education level were not significant at predicting medication use. This is consistent with reports from other studies (Mckim et al., 1990; Brown et al., 1995; Hershman et al., 1995; Chrischilles et al., 1992).

Comparing the determinants of medication use between the Chinese-Canadians and the Red-Cross Canadians, it is obvious that cultural factors play an important role and cannot be ignored. Two variables that have distinctively different determinant roles between these two cultures are feeling lonely and medication review (Tables 6.69 and 6.70).

Feeling lonely was the strongest predictor of polypharmacy in the Red-Cross Canadian sample, but not a predictor in the Chinese-Canadians. Although the prevalence of feeling lonely was essentially the same in both samples (38.7% for Red-Cross and 36.8% for Chinese), the nature of loneliness might be very different. Most Red-Cross Canadians lived alone (58.3%) at an old age. The loneliness experienced by this group might be more likely to result in depression, which has been found to correlate with high somatic complaints, hence higher medication use (Chrischilles et al., 1992; Laukkanen et al., 1992; Kroenke and Pinholt, 1990). In the Chinese-Canadian sample, most of them lived with someone, so their source of loneliness might be related more to the immigration process. Also, as informal care is easily accessible, this may act as a buffer to the progression of loneliness manifesting itself in a more serious form as depression. Using medication as a method to handle loneliness is undesirable. More non-drug treatment should be explored with the Red-Cross Canadians to reduce inappropriate medication use.

Medication reviews were found to be *positively* related to an increased likelihood of polypharmacy (4 times higher, Table 6.64), and increased number of Western medication used (Table 6.68) for the Red-Cross Canadians, but not the Chinese-Canadians. The difference between these two cultures could be related to divergent cultural beliefs. As discussed earlier, in the Chinese culture, traditional beliefs in social sensitivity and filial piety inhibit challenging an expert and increase individuals' submission to authority (Chae, 1987; Louie, 1985). Therefore, Chinese-Canadian elders would be unlikely to request different or more medications from physicians, hence the pattern of increased medication use when physicians reviewing their medicines might not be present. In the general North American population, studies have shown that for those 65 years and older, each physician visit leads to an average of two more medications prescribed; and the mean number of prescriptions per encounter written for those 65 years and older are much higher than for the younger population (Ferguson, 1990; Knapp, Knapp, Thomas, Wiser, Michocki, Nuessle and Knapp, 1984). It is not known if this increase is a result of patient requests, or independent physician decisions. The present study also does not permit conclusions on whether the polypharmacy or increased medication use was justified or could be avoided; however, polypharmacy does present a potential hazard to the users, especially elderly people, through adverse drug reactions, medication-medication interactions, and elevated risk of non-compliance. Results indicating that about 25% of the community-based elderly received at least one potentially inappropriate medications (Wilcox, Himmelstein and Woolhandler, 1994), raise further concerns about the risks of polypharmacy.

Based on the results of this study, it is obvious that medication use is not simply driven by biological factors (e.g., number of diseases, pain, physical health problem), but also by social and cultural factors (e.g., lived with child, country of origin), psychosocial factors (e.g., health beliefs, perceived health, feeling lonely, social isolation problems), and service use factors (e.g., hospitalized, medication review). In addition, interactions between these factors and medication must be examined. This multidimensional nature to the causal pathway of medication use must be addressed by using a comprehensive assessment instrument in order to be sensitive to the diverse and complex patterns of medication use.

CHAPTER 7. SUMMARY DISCUSSION

7.1 Consolidation of Information

Using the phonologically based surname search method and strategies in reducing community resistance, it was possible to achieve a near census coverage of the Chinese-Canadian elderly in the Kitchener/Waterloo area with response rate of about 90%. This is in contrast to many studies on the health of minority cultural groups where response rate could be as low as 25% (Wu, 1996). Using the above methods, it is possible to study the Chinese with high representiveness, so results can be generalized to the community-based Chinese elderly population in the selected urban centres.

Results from the health status and medication use study showed that there are variations in health and medication use by culture, and that TCM is very important to the Chinese elderly, (e.g., nearly 30% of the Chinese-Canadians use TCM for medicinal reasons). In addition, TCM has been found to be important for the Chinese-Canadian elderly in dealing with pain, a variety of diseases, and severe illnesses (measured by hospitalization). On the other hand, there are serious problems revealed in the sale of TCM, including a high degree of non-compliance issues of proprietary TCM products with the Canadian Food and Drugs Act. Non-compliance issues included banned P-TCM products being available on the market, P-TCM products containing Western medicines, P-TCM products making erroneous claims, and many P-TCM products containing inaccurate and insufficient labelling information. P-TCM products often claim a variety of strong medicinal effects and they are inexpensive compared with Western medicines. Therefore, the probability of inappropriate use may be elevated in the P-TCM. Health care providers

are unfamiliar with the treatment philosophy of TCM, and unaware of TCM use in this population (due to inadequate communication), so proper monitoring of medication use is lacking. Further, TCM are easily accessible from places where no qualified professionals is available to provide proper consultation, which presents serious health hazards. When examining the determinants of TCM, besides health problems, socially isolated individuals have an elevated risk of using TCM. This social characteristic further places these individuals in danger of over-use, mis-use, or abuse of TCM, because necessary social support and opportunity to exchange TCM information are both lacking.

Despite numerous concerns, the desire to use TCM is evidently strong. Therefore, regulatory bodies cannot respond to the TCM product non-compliance issue by simply eliminating them from the market, or enforce drastic regulations that may drive their sales underground. Either outcome could place unexpected risks to the general public who use TCM.

Finally, the multidimensional nature of health and medication use in the elderly illustrate the need for a standardized comprehensive health assessment instrument. The MDS-HC has proved itself to be an excellent tool in the investigation of a variety of health issues. In the Chinese population, the translated MDS-HC has shown cultural applicability in different dialects in Chinese, lending itself to potential wide used in the general Chinese population in China, Taiwan, Hong Kong, and other Chinese speaking countries.

7.2 Policy and Program Implications

7.2.1 Canada

Several public policy and program directions are needed to addresses the needs identified in this study. First and foremost is government regulation on properly controlling the sales and labelling of P-TCM products. Recently, the Health Protection Branch of Health Canada attempted to regulate the import of TCM raw materials by requiring Drug Identification Number (DIN), with enormous negative public reactions. Arguments that the DIN is an appropriate form of identification for Western medicine, is not suitable for the herbal raw materials of TCM. This proposed regulation was culturally ill-considered, and was subsequently put on hold until further evaluation.

This experience is a good example of how drastic regulation changes without adequate involvement of stakeholder groups can result in wasted efforts and unnecessary public resentment. While there are obvious reasons of some urgency to act, especially in dealing with banned products and serious violations in labelling (e.g., Schedule A diseases), any regulatory and enforcement initiatives must occur in partnership with the cultural community affected, clinical and research experts to ensure a smooth implementation of the process and to minimize public resistance. Also, regulatory protocols that are being used or developed in other countries (e.g., China, Hong Kong, and Taiwan) should be examined, in conjunction with existing Canadian drug regulations, to arrive at a sensible and culturally appropriate regulatory plan.

An education program is also essential in helping Chinese-Canadians to better understand the importance of preventive health, the benefits of Western medical and TCM

treatments, as well as contraindications of combined medication used and polypharmacy. Since a large proportion of Chinese-Canadians are not well educated, programs that are supported by the government, with systematic delivery of important health and home safety information can help fulfill the desire of more education to enrich latter life and help prevent serious illness (Chi and Lee, 1991). The Central Ontario Chinese Cultural Centre (COCCC), an already well established community organization, can act as the bridge for information dissemination. With adequate financial and professional support from the government, the COCCC can accomplish the goals of education, and can help those elders with identified social functioning and isolation problems to be more involved in community programs.

Improving physician prescribing practices is crucial in improving disease management without additional pressure on health care cost or other health services. Significant overprescribing probably occurs in the treatment of psychosocial disorders (e.g., sleep disturbance, anxiety) (MacLeod, 1996), so other initiatives to address these problems in the frail elderly population are important. Optimal use of medication and non-medication treatments should be explored in the elderly where loneliness and depression are prevalent before the "quick fix" approach of giving out medications be attempted. Under use of non-medication formal services is evident in the present study. Although many studies show age is not necessarily related to increased adverse drug reactions (see Nolan and O'Malley 1988a), evidence on polypharmacy (which is strongly associated with old age) relating to adverse drug reaction is clear. Hence, reducing polypharmacy can contribute to reduced health risks and cost of adverse drug reactions.

There are reports that many health care providers believe their own professional health care practices are superior (Fong, 1985); hence, they overlook other culturally important alternative approaches. Considerable evidence suggests that dissatisfaction with prescribed treatment leads to alternative health care use, and Canadian health care providers must find ways to meet the needs of these individuals. It should be realized that treatment is most effective when the patient, family and health care providers work together to incorporate the patient's perception and beliefs into the care plan.

Finally, there should also be government regulations on using a common assessment tool in collecting longitudinal national data on health of the elderly in community-based health services. Only by doing so can policy formation that is based on meaningful comparison and interpretation of health data be possible.

7.2.2 Asian/Pacific Countries

A common concern in health care experienced by many countires, especially by developing industrial countries in the Asian/Pacific rim is the lack of uniform health assessment information as part of normal service delivery. In Hong Kong, the health care policy focuses mainly on acute, crisis-intervention approaches, which fails to meet the needs of the elderly, and is costly (Chi and Lee, 1991). Although some form of health assessment records are available, they are often narrowly focused and cannot address the multidimensional nature of the elderly health care needs. Futher, these records are not fully comparable across programs and facilities, and since they are collected at a single point in time, studies of outcome is difficult.

The MDS-HC as demonstrated in the present study, provides a logical solution to the above concerns. Having been tested successfully with the Chinese-Canadians, the MDS-HC-Chinese is a suitable instrument for applications with the Chinese elderly in Asian/Pacific countries. Besides being a standardized comprehensive clinical instrument, the MDS-HC also offers two policy level applications. The Home Care Utilization Groups (HUGs), a resource allocation system based on case-mixed measurements allows the allocation of resources to facilities on the basis of the mix of individuals in the facility rather than the type of facility. The Quality Indicators (QIs), which use variables from the MDS in different combinations, can reveal potential problems with the quality of service delivery (Zimmerman, Karon, Arling, Clark, Collins, Ross and Sainfort, 1995).

In conjuction with a series of existing and developing MDS systems (MDS for nursing home, MDS for acute care, MDS for mental health), it is possible to conduct direct comparisons of health characteristics of individuals living in the community, institutions and other health care facilities. Finally, as large scale research projects based on the MDS are ongoing in 16 countris including Canada, Japan, Netherlands, UK and USA, cross-cultural comparisons of health characteristics at the individual and facility level can be acheived.

7.3 Future Research

There are many strengths of the present research. First and foremost is the use of a common assessment tool between the Chinese-Canadian and Red-Cross Canadian populations, which enables meaningful comparisons. Second, the representiveness of the

Chinese-Canadians greatly improves external validity and allows for generalization of the research findings. Last but not least, the examination of multidimensional factors and their interaction effects, and of cultural factors in health and medication use provides a more complete picture than studies which neglected these important factors.

Nonetheless, several limitations exist with the present study. Although representative, the Chinese-Canadian study in Kitchener/Waterloo suffered from relatively small sample size and lacked differential gradations of health status. Immigration effects could not be fully investigated due to lack of international data for the Chinese elderly that are based on a standardized assessment protocol. Also, being cross-sectional in nature, the casual pathway and temporal order of events could not be established. Hospitalization, which can be both a cause and an outcome of using TCM and combined medication used could not be determined in the present study design. Many questions on modifiable risk factors such as social isolation and feeling lonely cannot be answered.

Implementing intervention studies using a longitudinal design, in cities with a large sample of well to ill elderly Chinese (like Toronto), is a natural next step. Only by such an approach can outcome studies of medication use be possible.

Finally, many researchers have stressed the importance of using a common assessment tool to establish comprehensive data based across cultural groups at the national level (Kitano et al., 1994; Wray, 1991). The MDS-HC is an appropriate assessment tool for the study of multidimensional health needs in different cultures, including the Chinese elderly. Besides research applications, the MDS-HC is also ideal for care-planning, funding and quality indication purposes (see Hirdes and Carpenter, 1997).

International comparisons of these applications should be performed to evaluate the effects of different models of health care. Studies in Asian/Pacific countries like China (including Hong Kong), Taiwan and other countries with Chinese speaking individuals using the MDS-HC should be the next step to gaining the long lacking information on effects of health care system, culture, and immigration on health of the Chinese elderly. With comparable data across cultures and countries, the goal of global improvement of health is one step closer.

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Appendix A

MDS-HC Form (Version 10)

MINIMUM DATA SET - HOME CARE (MDS-HC)©

(Status in last 7 days unless other time frame indicated)

SECTION AA. NAME AND IDENTIFICATION NUMBERS

1.	NAME OF CLIENT	a. (Last/Family Name) b. (First Name) c. (Middle Initial)
2.	CASE RECORD NO.	

SECTION BB. PERSONAL ITEMS *(Complete at Intake Only)*

1.	GENDER	1. Male 2. Female
2.	BIRTHDATE	Month – Day – Year
3.	MARITAL STATUS	1. Never married 3. Widowed 5. Divorced 2. Married 4. Separated 6. Other
4.	LANGUAGE	Primary Language English 0. English 1. French 2. Other
5.	EDUCATION (*Highest Level Completed*)	1. No schooling 5. Technical or trade school 2. 8th grade/less 6. Some college 3. 9-11 grades 7. Bachelor's degree 4. High school 8. Graduate degree
6.	RESPONSIBILITY/ ADVANCED DIRECTIVES	a. Client has a legal guardian 0. No 1. Yes b. Client has advanced medical directives in place (for example, a do not hospitalize order) 0. No 1. Yes

SECTION CC. REFERRAL ITEMS *(Complete at Intake Only)*

1.	DATE CASE OPENED/ REOPENED	Month – Day – Year
2.	REASON FOR REFERRAL	1. Post hospital care 4. Eligibility for home care 2. Community chronic care 5. Day care 3. Home placement screen 6. Other
3.	WHERE LIVED AT TIME OF REFERRAL	1. Private home/apt. with no home care services 2. Private home/apt. with home care services 3. Board and care/assisted living/group home 4. Nursing home 5. Other
4.	WHO LIVED WITH AT REFERRAL	1. Lived alone 2. Lived with spouse only 3. Lived with spouse and other(s) 4. Lived with child (not spouse) 5. Lived with other(s) (not spouse or children) 6. Lived in group setting with non-relative(s)
5.	RESIDENTIAL HISTORY AND SERVICES 5 YEARS PRIOR TO REFERRAL	(*Check all settings resident lived in or services received during 5 years prior to date case opened (item BB1)*) Lived in a nursing home a. Lived for protracted period of time in a hospital setting b. Lived in a mental health/psychiatric setting c. Lived in a mental retardation/developmental disability setting d. Lived in assisted living or congregate apartment e. Home care client prior to this episode f. Recipient of rehabilitative services prior to this episode g. *NONE OF ABOVE* h.

SECTION A. ASSESSMENT INFORMATION

1.	ASSESSMENT REFERENCE DATE	*Date of assessment* Month – Day – Year
2.	REASONS FOR ASSESSMENT	TYPE OF ASSESSMENT 1 Initial assessment 2 Follow-up assessment 3 Routine assessment at fixed intervals 4 Review within 30-day period prior to discharge from the program 5 Review at return from hospital 6 Change in status 7 Other

SECTION B. COGNITIVE PATTERNS

1.	MEMORY	Short-term memory OK — seems/appears to recall after 5 minutes 0. Memory OK 1. Memory problem
2.	COGNITIVE SKILLS FOR DAILY DECISION-MAKING	How well client made decisions about organizing the day (e.g., when to get up or have meals, which clothes to wear or activities to do) 0. *INDEPENDENT*—decisions consistently reasonable 1. *MODIFIED INDEPENDENCE*—some difficulty in new situations 2. *MODERATELY IMPAIRED*—decisions poor; cues/supervision required 3. *SEVERELY IMPAIRED*—never/rarely made decisions
3.	INDICATORS OF DELIRIUM	a. Sudden or new onset/change in mental function (including ability to pay attention, awareness of surroundings, being coherent, unpredictable variation over course of day) 0. No 1. Yes b. In the last 90 days, client has become agitated or disoriented such that his or her safety is endangered or client requires protection by others 0. No 1. Yes

SECTION C. COMMUNICATION/HEARING PATTERNS

1.	HEARING	(*With hearing appliance if used*) 0. *HEARS ADEQUATELY*—normal talk, TV, phone, doorbell 1. *MINIMAL DIFFICULTY*—when not in quiet setting 2. *HEARS IN SPECIAL SITUATIONS ONLY*—speaker has to adjust tonal quality and speak distinctly 3. *HIGHLY IMPAIRED*—absence of useful hearing
2.	MAKING SELF UNDERSTOOD	(*Expressing information content—however able*) 0. *UNDERSTOOD* 1. *USUALLY UNDERSTOOD*—difficulty finding words or finishing thoughts 2. *SOMETIMES UNDERSTOOD*—ability is limited to making concrete requests 3. *RARELY/NEVER UNDERSTOOD*
3.	ABILITY TO UNDERSTAND OTHERS	(*Understands verbal information—however able*) 0. *UNDERSTANDS* 1. *USUALLY UNDERSTANDS*—may miss some part/element of message 2. *SOMETIMES UNDERSTANDS*—responds adequately to simple, direct communication 3. *RARELY/NEVER UNDERSTANDS*

SECTION D. VISION PATTERNS

1.	VISION	(*Ability to see in adequate light and with glasses if used*) 0. *ADEQUATE*—sees fine detail, including regular print in newspapers/books 1. *IMPAIRED*—sees large print, but not regular print in newspapers/books 2. *MODERATELY IMPAIRED*—limited vision; not able to see newspaper headlines, but can identify objects 3. *HIGHLY IMPAIRED*—object identification in question, but eyes appear to follow objects 4. *SEVERELY IMPAIRED*—no vision or sees only light, colors, or shapes; eyes do not appear to follow objects
2.	VISUAL LIMITATION/ DIFFICULTIES	Sees halos or rings around lights, curtains over eyes, or flashes of lights 0. No 1. Yes
3.	VISION DECLINE	Worsening of vision as compared to status of 90 days ago 0. No 1. Yes

SECTION E. MOOD AND BEHAVIOR PATTERNS

1.	INDICATORS OF DEPRESSION, ANXIETY, SAD MOOD	(*Code for indicators observed in last 30 days, irrespective of the assumed cause*) 0 Indicator not exhibited in last 30 days 1 Indicator of this type exhibited up to five days a week 2 Indicator of this type exhibited daily or almost daily (6, 7 days a week)
		a. A feeling of sadness or being depressed, that life is not worth living, that nothing matters, that he or she is of no use to anyone or would rather be dead
		b. Persistent anger with self or others—e.g., easily annoyed, anger at care received
		c. Repetitive anxious complaints, concerns—e.g., persistently seeks attention/reassurance regarding schedules, meals, laundry, clothing, relationship issues
		d. Sad, pained, worried facial expressions — e.g., furrowed brows
		e. Recurrent crying, tearfulness
		f. Withdrawal from activities of interest—e.g., no interest in long standing activities or being with family/friends

☐ = When box blank, must enter number or letter [a.] = When letter in box, check if condition applies

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2.	BEHAVIORAL SYMPTOMS	In the last 7 days, instances when the client exhibited following behavioral symptoms. If EXHIBITED, ease of altering the symptom when it occurred. 0. Did not occur in last 7 days 1. Occurred, easily altered 2. Occurred, not easily altered
		a. WANDERING (moved with no rational purpose, seemingly oblivious to needs or safety)
		b. VERBALLY ABUSIVE BEHAVIORAL SYMPTOMS (threatened, screamed at, cursed at others)
		c. PHYSICALLY ABUSIVE BEHAVIORAL SYMPTOMS (hit, shoved, scratched, sexually abused others)
		d. SOCIALLY INAPPROPRIATE/DISRUPTIVE BEHAVIORAL SYMPTOMS (disruptive sounds, noisiness, screaming, self-abusive acts, sexual behavior or disrobing in public, smears/throws food/feces, rummaging, repetitive behavior, rises early and causes disruption)
		e. AGGRESSIVE RESISTANCE OF CARE (e.g., threw medications, pushed caregiver)
3.	CHANGES IN BEHAVIOR SYMPTOMS	Behavioral symptoms have become worse or are less well tolerated by family as compared to 30 days ago 0. No, or no change in behavioral symptoms 1. Yes

SECTION F. SOCIAL FUNCTIONING

1.	INVOLVEMENT	a. Client is at ease interacting with others (e.g., likes to spend time with others) 0. At ease 1. Not at ease
		b. Openly expresses conflict or anger with family/friends 0. No 1. Yes
2.	CHANGE IN SOCIAL ACTIVITIES	As compared to 180 days ago, decline in the client's level of participation in social, religious, occupational or other preferred activities. IF THERE WAS A DECLINE, Client distressed by this fact 0. No decline 1. Decline, not distressed 2. Decline, distressed
3.	ISOLATION	a. Length of time client is alone during the day (morning and afternoon) 0. Never or hardly ever 1. About one hour 2. Long periods of time—e.g., all morning 3. All of the time
		b. Client says or indicates that he/she feels lonely 0. No 1. Yes

SECTION G. INFORMAL SUPPORT SERVICES

			(A) Prim	(B) Secn
1.	TWO KEY INFORMAL HELPERS Primary (A) and Secondary (B)	NAME OF PRIMARY AND SECONDARY HELPERS		
		a. (Last/Family Name) b. (First)		
		c. (Last/Family Name) d. (First)		
		e. Lives with client 0. Yes 1. No 2. No such helper (Skip other items)		
		f. Relationship to client 0. Child or child-in-law 2. Other Relative 1. Spouse 3. Friend/neighbor		
		Areas of help 0. Yes 1. No		
		g. — Advice or emotional support		
		h. — IADL care		
		i. — ADL care		
		If needed, willingness (with ability) to increase help 0. More than 2 hours 1. 1-2 hours per day 2. No		
		j. — Emotional support		
		k. — IADL care		
		l. — ADL care		
2.	CAREGIVER STATUS	(Check all that apply)		
		A caregiver is unable to continue in caring activities—e.g., decline in the health of the caregiver makes it difficult to continue	a.	
		Primary caregiver is not satisfied with support received from family and friends (e.g., other children of client)	b.	
		Primary caregiver expresses feelings of distress, anger or depression	c.	
		NONE OF ABOVE	d.	
3.	EXTENT OF HELP (HOURS OF CARE, ROUNDED)	For instrumental and personal activities of daily living received over the last 7 days, indicate extent of help from family, friends, and neighbors	HOURS	
		a. Sum of time across five weekdays		
		b. Sum of time across two weekend days		

SECTION H. PHYSICAL FUNCTIONING (SELF PERFORMANCE OF INSTRUMENTAL (IADL) AND PERSONAL (ADL) ACTIVITIES OF DAILY LIVING)

1. IADL SELF PERFORMANCE—Code for functioning in routine activities around the home or in the community during the last 7 days.

(A) IADL SELF PERFORMANCE CODE—*(Code for client's performance during last 7 days)*
0. *INDEPENDENT*—did on own
1. *SOME HELP*—help some of the time
2. *FULL HELP*—performed with help all of the time
3. *BY OTHERS*—performed by others
8. *ACTIVITY DID NOT OCCUR*

(B) IADL DIFFICULTY CODE *How difficult it is (or would it be) for client to do activity on own*
0. *NO DIFFICULTY*
1. *SOME DIFFICULTY*—e.g., needs some help, is very slow, or fatigues
2. *GREAT DIFFICULTY*—e.g., little or no involvement in the activity is possible

			(A) Performance	(B) Difficulty
a.	MEAL PREPARATION	How meals are prepared (e.g., planning meals, cooking, assembling ingredients, setting out food and utensils)		
b.	ORDINARY HOUSE WORK	How ordinary work around the house is performed (e.g., doing dishes, dusting, making bed, tidying up, laundry)		
c.	MANAGING FINANCE	How bills are paid, checkbook is balanced, household expenses are balanced		
d.	MANAGING MEDICATIONS	How medications are managed (e.g., remembering to take medicines, opening bottles, taking correct drug dosages, giving injections, applying ointments)		
e.	PHONE USE	How telephone calls are made or received (with assistive devices such as large numbers on telephone, amplification as needed)		
f.	SHOPPING	How shopping is performed for food and household items (e.g., selecting items, managing money)		
g.	TRANSPORTATION	How client travels by vehicle—e.g., gets to places beyond walking distance		

2. ADL SELF-PERFORMANCE—The following address the client's physical functioning in routine personal activities of daily life, for example, dressing, eating, etc. during the last 7 days, considering all episodes of these activities. For clients who performed an activity independently, be sure to determine and record whether others encouraged the activity or were present to supervise or oversee the activity

0 *INDEPENDENT*—No help or oversight —OR— Help/oversight provided only 1 or 2 times during last 7 days

1 *SUPERVISION*—Oversight, encouragement or cueing provided 3 or more times during last 7 days —OR— Supervision (3 or more times) plus physical assistance provided only 1 or 2 times during last 7 days

2 *LIMITED ASSISTANCE*—Client highly involved in activity; received physical help in guided maneuvering of limbs or other non-weight bearing assistance 3 or more times

3 *EXTENSIVE ASSISTANCE*—While elder performed part of activity over last 7-day period, help of following type(s) were provided 3 or more times:
— Weight-bearing support —OR—
— Full performance by another during part (but not all) of last 7 days

4 *TOTAL DEPENDENCE*—Full performance of activity by another during entire 7 days

8 *ACTIVITY DID NOT OCCUR* during entire 7 days (regardless of ability)

a.	MOBILITY IN BED	Including moving to and from lying position, turning side to side, and positioning body while in bed
b.	TRANSFER	Including moving to and between surfaces—to/from bed, chair, wheelchair, standing position. (Note—*Excludes to/from bath/toilet*)
c.	LOCOMOTION IN HOME	(Note—If in wheelchair, self-sufficiency once in chair)
d.	DRESSING	Including taying out clothes, retrieving clothes from closet, putting clothes on and taking clothes off.
e.	EATING	Including taking in food by any method *excluding tube feedings.*
f.	TOILET USE	Including using the toilet room or commode, bedpan, urinal, transferring on/off toilet, cleaning self after toilet use, changing pad, managing any special devices required (ostomy or catheter), and adjusting clothes.
g.	PERSONAL HYGIENE	Including combing hair, brushing teeth, shaving, applying makeup, washing/drying face and hands, and perineum (EXCLUDE baths and showers)
3.	BATHING	In the last 7 days (include shower, full tub or sponge bath, exclude washing back or hair) 0 *INDEPENDENT*, did on own 1 *SUPERVISION*—oversight help only 2 *RECEIVED ASSISTANCE IN TRANSFER ONLY* 3 *RECEIVED ASSISTANCE IN PART OF BATHING ACTIVITY* 4 *TOTAL DEPENDENCE* 8 *ACTIVITY DID NOT OCCUR*
4.	PRIMARY MODES OF LOCOMOTION	0 No assistive device 1 Cane 2 Walker/crutch 3 Scooter (e.g., Amigo) 4 Wheelchair 5 Activity does not occur a. Indoors b. Outdoors

5. STAIR CLIMBING — In the last 7 days, how client went up and down stairs (e.g., single or multiple steps, using handrail as needed). If client did not go up and down stairs, code client's capacity for stair climbing
0. Up and down stairs without help
1. Up and down stairs with help
2. Not go up and down stairs—could do without help
3. Not go up and down stairs—could do with help
4. Not go up and down stairs—no capacity to do it
8. *UNKNOWN*—did not climb stairs and assessor is unable to judge whether the capacity exists

6. STAMINA
a. In a typical week, during the last 30 days, code the number of days client usually went out of the house or building in which client lives (no matter for how short a time period)
0. Every day 2. 1 day a week
1. 2-6 days a week 3. No days

b. Hours of physical activities in the last 7 days (e.g., walking, cleaning house, exercise)
0. Two or more hours 1. Less than two hours

7. FUNCTIONAL POTENTIAL
- a. Client believes he/she capable of increased functional independence (ADL, IADL, mobility)
- b. Caregivers believe client is capable of increased functional independence (ADL, IADL, mobility)
- c. Good prospects of recovery from current disease or condition, improved health status expected
- d. *NONE OF ABOVE*

SECTION L. CONTINENCE IN LAST 14 DAYS

1. BLADDER CONTINENCE — In last 14 days control of urinary bladder function (with appliances such as catheters or incontinence program employed) [Note—if dribbles, volume insufficient to soak through underpants]
0. *CONTINENT*—Complete control
1. *USUALLY CONTINENT*—Incontinent episodes once a week or less
2. *OCCASIONALLY INCONTINENT*—Incontinent episodes 2 or more times a week but not daily
3. *FREQUENTLY INCONTINENT*—Tends to be incontinent daily, but some control present
4. *INCONTINENT*—Inadequate control, multiple daily episodes

2. BLADDER DEVICES — (*Check all that apply in last 14 days*)
- a. Use of pads or briefs to protect against wetness
- b. Use of an indwelling urinary catheter
- c. *NONE OF ABOVE*

3. BOWEL CONTINENCE — In last 14 days, control of bowel movement (with appliance or bowel continence program if employed)
0. *CONTINENT*—Complete control
1. *USUALLY CONTINENT*—Bowel incontinent episodes less than weekly
2. *OCCASIONALLY INCONTINENT*—Bowel incontinent episode once a week
3. *FREQUENTLY INCONTINENT*—Bowel incontinent episodes 2-3 times a week
4. *INCONTINENT*—Bowel incontinent all (or almost all) of the time

SECTION J. DISEASE DIAGNOSES

Disease/infection that doctor has indicated is present and affects client's status, requires treatments, or requires symptom management. Also include if disease is being monitored by a health professional or is the reason for a hospitalization in last 90 days
0. Not present
1. Present—not subject to focused treatment or monitoring by home care nurse
2. Present—monitored or treated by home care nurse

1. DISEASES

HEART/CIRCULATION
- a. Cerebrovascular accident (stroke)
- b. Congestive heart failure
- c. Coronary artery disease
- d. Hypertension
- e. Irregularly irregular pulse
- f. Peripheral vascular disease

NEUROLOGICAL
- g. Alzheimer's
- h. Dementia other than Alzheimer's disease
- i. Head trauma
- j. Multiple sclerosis
- k. Parkinsonism

MUSCULO-SKELETAL
- l. Arthritis
- m. Hip fracture
- n. Other fractures (e.g., wrist, vertebral)
- o. Osteoporosis

SENSES
- p. Cataract
- q. Glaucoma

PSYCHIATRIC/MOOD
- r. Any psychiatric diagnosis

INFECTIONS
- s. HIV infection
- t. Pneumonia
- u. Tuberculosis
- v. Urinary tract infection (in last 30 days)

OTHER DISEASES
- w. Cancer—(in past 5 years) not including skin cancer
- x. Diabetes
- y. Emphysema/COPD/asthma
- z. Renal Failure
- aa. Thyroid disease (hyper or hypo)

2. OTHER CURRENT OR MORE DETAILED DIAGNOSES AND ICD-9 CODES
- a. _____ (a)
- b. _____ (b)
- c. _____ (c)
- d. _____ (d)

SECTION K. HEALTH CONDITIONS AND PREVENTIVE HEALTH MEASURES

1. PREVENTIVE HEALTH — (*Check all that apply—in past 2 years*)
- a. Blood pressure measured
- b. Received influenza vaccination
- c. IF FEMALE: Received breast examination or mammography
- d. *NONE OF ABOVE*

2. PROBLEM CONDITIONS PRESENT ON 2 OR MORE DAYS — (*Check all that were present on at least 2 of the last 7 days*)
- a. Diarrhea
- b. Difficulty urinating or urinating 3 or more times at night
- c. Fever
- d. Loss of appetite
- e. Vomiting
- f. *NONE OF ABOVE*

3. PROBLEM CONDITIONS IN LAST WEEK — (*Check all present at any point during last 7 days*)

PHYSICAL HEALTH
- a. Change in sputum production
- b. Chest pain at exertion or chest pain/pressure at rest
- c. Constipation in 4 of last 7 days
- d. Dizziness or lightheadedness
- e. Edema
- f. Shortness of breath

MENTAL HEALTH
- g. Delusions
- h. Hallucinations
- i. *NONE OF ABOVE*

4. PAIN
a. Frequently complains or shows evidence of pain (in last 7 days)
0. No pain (skip to item K4a) 1. Pain less than daily 2. Pain daily

b. Pain is unusually intense
0. No 1. Yes

c. Pain intensity disrupts usual activities
0. No 1. Yes

d. Character of pain
0. No pain 1. Localized - single site 2. Multiple sites

e. Pain controlled by medication
0. No pain 1. Medication offered no control 2. Pain is partially or fully controlled by medication

5. FALLS FREQUENCY — Number of times fell in last 180 days (or since last assessment)
If none, code "0"; if more than 9, code "9"

6. DANGER OF FALL
a. Unsteady gait
0. No 1. Yes

b. Client limits going outdoors due to fear of falling (e.g., stopped using bus, goes out only with others)
0. No 1. Yes

7. LIFE STYLE (Drinking/ Smoking)
a. In the last 90 days, client felt the need or was told by others to cut down on drinking, or others were concerned with client's drinking
0. No 1. Yes

b. In the last 90 days, client had to have a drink first thing in the morning to steady nerves (i.e., an "eye opener") or has been in trouble because of drinking
0. No 1. Yes

c. Over a typical week in the last month, record the number of days (0-7) client had one or more drinks

d. On days client had a drink, record the number of drinks usually consumed per day (*code 0 for no drinks, 9 for 9 or more drinks*)

e. Smoked or chewed tobacco daily
0. No 1. Yes

8. HEALTH STATUS INDICATORS
- a. Client feels he/she has poor health (when asked)
- b. Has conditions or diseases that make cognition, ADL, mood, or behavior patterns unstable (fluctuations, precarious, or deteriorating)
- c. Experiencing a flare-up of a recurrent or chronic problem
- d. Treatments changed in last 30 days because of a new acute episode or condition
- e. Prognosis of less than six months to live—e.g., physician has told client or client's family that client has end-stage disease
- f. *NONE OF ABOVE*

9. OTHER STATUS INDICATORS
- a. Fearful of a family member or caregiver
- b. Unusually poor hygiene
- c. Unexplained injuries, broken bones, or burns
- d. Neglected, abused, or mistreated
- e. Physically restrained (e.g., limbs restrained, used bed rails, restrained to chair when sitting)
- f. *NONE OF ABOVE*

SECTION L. NUTRITION/HYDRATION STATUS

1. WEIGHT CHANGE
Unintended weight loss of 5% or more in the last 30 days or 10% or more in the last 180 days
0. No 1. Yes

2. CONSUMPTION
a. In at least 4 of the last 7 days, ate one or fewer meals a day
0. No 1. Yes

b. In last 3 days, noticeable decrease in the amount of food client usually eats or fluids usually consumes
0. No 1. Yes

c. Insufficient fluid—did not consume all/almost all fluids during last 3 days
0. No 1. Yes

3. NUTRITIONAL TREATMENTS
A. Management codes
0. Not used 1. On own
2. Partially performed by others
3. Fully performed by others
B. Number of days formal care received in last week

	(A) Man	(B) Days
a. Intravenous or infusion therapy—hydration (not including TPN)		
b. Fluids by mouth		
c. Parenteral nutrition (TPN or lipids)		
e. Enteral—tube feeding		

SECTION M. DENTAL STATUS (ORAL HEALTH)

1. ORAL STATUS
(Check all that apply)
a. Problem chewing or swallowing (e.g., pain while eating)
b. Mouth is "dry" when eating a meal
c. Problem brushing teeth or dentures
d. NONE OF ABOVE

SECTION N. SKIN CONDITION

1. SKIN PROBLEMS
Any troubling skin conditions or changes in the last 30 days (e.g., burns, bruises, rashes, itchiness, body lice, scabies)
0. No 1. Yes

2. ULCERS (Pressure/Stasis)
Presence of an ulcer anywhere on the body. Ulcers include any area of persistent skin redness (Stage 1); partial loss of skin layers (Stage 2); deep craters in the skin (Stage 3); and breaks in skin exposing muscle or bone (Stage 4) [Code 0 if no ulcer; otherwise record the highest ulcer stage (Stage 1–4)]
a. Pressure ulcer—any lesion caused by pressure, shear forces, resulting in damage of underlying tissues
b. Stasis ulcer—open lesion caused by poor circulation in the lower extremities

3. OTHER SKIN PROBLEMS REQUIRING TREATMENT
(Check all that apply)
Burns (second or third degree)
Open lesions other than ulcers, rashes, cuts (e.g., cancer)
Skin tears or cuts
Surgical Wounds Sites
a. Thorax
b. Abdomen
c. Extremities
Other
NONE OF ABOVE

4. HISTORY OF RESOLVED PRESSURE ULCERS
Client previously had (at any time) or has an ulcer anywhere on the body
0. No 1. Yes

5. WOUND/ULCER CARE
A. Management codes
0. Not used 1. On own
2. Partially performed by others
3. Fully performed by others
B. Number of days formal care received in last week

	(A) Man	(B) Days
a. Antibiotics, systemic or topical		
b. Dressings		
c. Hyperbaric oxygen		
d. Pressure reduction/relieving devices		
e. Nutrition or hydration		
f. Turning/repositioning		
g. Debridement		
h. Surgical wound care		

6. FOOT PROBLEMS
(Check all that apply)
a. Corns, calluses, structural problems, infections, lung
b. Open lesions on the foot
c. Foot not inspected in last 90 days by client or other
d. NONE OF ABOVE

SECTION O. ENVIRONMENTAL ASSESSMENT

1. HOME ENVIRONMENT
(Check any of following that make home environment hazardous or uninhabitable (if none apply, check NONE OF ABOVE. If temporarily in institution, base assessment on home visit)]
a. Lighting in evening (including inadequate or no lighting in living room, sleeping room kitchen, toilet, corridors)
b. Flooring and carpeting (e.g., holes in floor, electric wires where client walks, scatter rugs)
c. Bathroom and toilet room (e.g., non-operating toilet, leaking pipes, no rails though needed, slippery bathtub, outside toilet)
d. Kitchen (e.g., dangerous stove, inoperative refrigerator, infestation by rats or bugs)
e. Heating and cooling (e.g., too hot in summer, too cold in winter, wood stove in a home with an asthmatic)
f. Personal safety (e.g., fear of violence, safety problem in going to mailbox or visiting neighbors, heavy traffic in street)
g. Access to home (e.g., difficulty entering/leaving home)
h. Access to rooms in house (e.g., unable to climb stairs)
i. NONE OF ABOVE

2. LIVING ARRANGEMENT
a. As compared to 90 days ago, client now lives with other persons—e.g., moved in with another person, other moved in with client
0. No 1. Yes

b. Client or primary caregiver feels that client would be better off in another living environment
0. No 1. Client only 2. Caregiver only 3. Client and caregiver

SECTION P. SERVICE UTILIZATION

1. FORMAL CARE
(Minutes rounded to even 10 minutes)
Extent of care or care management in last 14 days involving

	This Agency (A) # of Days	(B) Hours	(C) Mins	Other Sources (D) Hours	(E) Mins
a. Home health aides					
b. Visiting nurses					
c. Homemaking services					
d. Meals					
e. Volunteer services					
f. Physical therapy					
g. Occupational therapy					
h. Speech therapy					
i. Day care or day hospital					
j. Social worker in home					

2. SPECIAL TREATMENTS, THERAPIES, PROGRAMS
Special treatments, therapies, and programs received or scheduled during the last 14 days (received in the home or on an outpatient basis) and adherence to the required schedule
0. Not applicable 1. Scheduled, full adherence as prescribed
2. Scheduled, partial adherence 3. Scheduled, not received

TREATMENTS		
a. Alcohol/drug treatment program		
b. Blood transfusions		
c. Chemotherapy		
d. Cardiac rehabilitation		
e. Continuous positive airway pressure (CPAP)		
f. Dialysis-peritoneal (CAPD)		
g. Dialysis-renal		
h. Holter monitor		
i. IV infusion - central		
j. IV infusion - peripheral		
k. Medication by injection		
l. Ostomy care		
m. Oxygen therapy - intermittent		
n. Oxygen therapy - continuous (concentrator)		
o. Oxygen therapy - continuous (other)		
p. Radiation therapy		
q. Respiratory therapy		
r. Tracheostomy care		
s. Ventilator		

THERAPIES		
t. Exercise therapy		
u. Occupational therapy		
v. Physical therapy		
w. Respiratory therapy (including suctioning, IPPB)		

PROGRAMS		
x. Day center		
y. Day hospital		
z. Hospice care		
aa. Physician or clinic visit		
bb. Respite care		

SPECIAL PROCEDURES DONE IN HOME		
cc. Daily nurse monitoring (e.g., EKG, urinary output)		
dd. Nurse monitoring less than daily		
ee. Medical alert bracelet or electronic security alert		
ff. Skin treatment		
gg. Special diet		
hh. Other		

3.	MANAGEMENT OF EQUIPMENT (In Last 14 Days)	Management codes: 0. Not used 1. Managed on own 2. Managed on own: if laid out or with verbal reminders 3. Partially performed by others 4. Fully performed by others	
		a. Oxygen b. IV c. Catheter	
4.	VISITS IN LAST 90 DAYS OR SINCE LAST ASSESSMENT	*Enter 0 if none, if more than 8, code "9"* a. Number of times ADMITTED TO HOSPITAL with an overnight stay b. Number of times VISITED EMERGENCY ROOM without an overnight stay c. EMERGENT CARE—including unscheduled nursing, physician, or therapeutic visits to office or home	
5.	TREATMENT GOALS	Any treatment goals that have been met in the last 90 days? 0. No 1. Yes	
6.	OVERALL CHANGE IN CARE NEEDS	Overall self sufficiency has changed significantly as compared to status of 90 days ago 0. No change 1. Improved—receives fewer supports 2. Deteriorated—receives more support	
7.	TRADE OFFS	Because of limited funds, during the last month, client made trade-offs among purchasing any of the following: prescribed medications, sufficient home heat, necessary physician care, adequate food, home care 0. No 1. Yes	

SECTION Q. MEDICATIONS

1.	NUMBER OF MEDICATIONS	Record the number of different medicines (prescriptions and over the counter), including eye drops, taken regularly or on an occasional basis in the last 7 days *[If none, code "0", if more than 9, code "9"]*	
2.	RECEIPT OF PSYCHOTROPIC MEDICATION	Psychotropic medications taken in the last 7 days (Note—Review client's medications with the list that applies to the following categories) 0. No 1. Yes	
		a. Antipsychotic b. Antianxiety c. Antidepressant d. Hypnotic	
3.	MEDICAL OVERSIGHT	Physician reviewed client's medications as a whole in last 180 days 0. Discussed with at least one physician (or no medication taken) 1. No single physician reviewed all medications	
4.	COMPLIANCE/ ADHERENCE WITH MEDICATIONS	Compliant all or most of time with medications prescribed by physician (both during and between therapy visits) 0. Always compliant 1. Compliant 80% of time or more 2. Compliant less than 80% of time 3. *NO MEDICATIONS PRESCRIBED*	
5.	LIST OF ALL MEDICATIONS θ	List prescribed and nonprescribed medications taken in last 7 days	

Name and Strength	Form 0. Pill or tablet 1. IV 2. I.M. 3. Inhale 4 Topical 5. Oral liquid	Number Taken	Freq 0. Daily 1. Weekly 2. Monthly 3. PRN 4. Other
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			
k.			

Appendix B

MDS-HC-Chinese Form

MINIMUM DATA SET - HOME CARE (Chinese)
(MDS-HC(C))

☐ =如是空格子，必須填進數字或字母

a =如在格子裏有字母，而情況適合的，則應勾選

封面頁 - 個人資料、轉介資料、各項醫療及社區服務的使用

第AA項：姓名及識別編號

1	姓名	姓：　　名：
2	編號	
3	保健卡號碼	

第BB項：各人資料

1	性別	1男　2女	
2	出生日期	年　月　日	
3	婚姻狀況	1未結過婚　2已婚　3鰥寡　4分居　5離婚　6其他	
4	語言	主要使用之語言 0英語　1廣東話　2國語 普統話　3其他中國方言：　4其他語言：	
5	教育程度 （所完成的最高程度）	1未曾讀書　2小學未畢業　3小學畢業　4初中畢業　5高中畢業 6工業學院畢業　7大專畢業　8大學畢業　9研究生畢業	
6	預示病危時醫療處理法	a 被訪者有沒有法律上的監護人？ 0沒有　1有 b 被訪者有沒有預先指定病危時的醫療處理法 （例如：不要送院指示） 0沒有　1有	

第CC項：轉介項目

1	訪問日期	年　月　日	
2	轉介的原因	6其他	
3	轉介時的住所	1住在自己家中，沒有正式家居護理服務 2住在自己家中，有家居護理服務 3老人宿舍 4護理安老院 5其他	
4	轉介時與何人居住	1獨居　2與配偶同住　3與配偶及他人同住 4與兒女同住（無配偶）　5與他人同住（無配偶或兒女） 6住在團體居所，無親戚同住　7其他	

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5	轉介前5年居住和接受治療的歷史	（選擇在前5年內所有居住過的地點及接受的治療） a曾住安老院 b曾住醫院約1個月 c曾住精神院 d曾住弱智醫院 e曾住協助式居所 f曾接受家居護理服務 g曾接受康復治療服務 h以上均沒有	a b c d e f g h

第A項：檢查及評估的資料

1	檢查及評估日期	年　　月　　日	
2	檢查及評估原因	檢評之種類 1首次檢評 2追蹤檢評 3定期例行檢評 4出院前30天內之檢評 5出院後之檢評 6病情或住院情況有改變之檢評 7其他	

第B項：認知能力常態

1	記憶	短捷記憶尚可 - 如在5分鐘後仍能喚回記憶 0 短捷記憶尚可　　1 短捷記憶有問題	
2	日常事務處理及決定的認知能力	被訪者在每日生活上的安排能力（例：何時起床及安排膳食，何種穿著及活動的選擇） 0 獨立 - 決定是合理及一貫性的 1 不完全獨立 - 面對新環境時有些困難 2 中等度的認知不健全 - 決定能力差和需要人提示及監管 3 嚴重的認知不健全 - 從未或極少自作決定	
3	妄想症的徵狀	a 精神狀態的突變（包括集中能力，對周遭環境的察覺力，思想之清晰及連貫，依循一天的規律） 0 沒有　　1 有 b 在過往的90天內，被訪者因心情煩躁或時空感混亂，而需要他人來保護其安危 0 沒有　　1 有	

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第C項：溝通與聽覺能力常態

1	聽覺	（如有助聽器應把它用上） 0 聽力適當 - 可正常交談，看電視，聽電話，聽到電鈴 1 輕微困難 - 當處於不安靜的環境時 2 只有在特殊情況下才能聽見 - 說話者需要調節音量和音調，及需發音清晰 3 聽力嚴重不健全 - 缺乏聽覺能力	
2	自我表達能力	（以任何方法表達意思） 0 旁人能明白 1 旁人通常能明白 - 用字或思維有困難 2 旁人有時能明白 - 只能表達具體的要求 3 旁人極難或無法明白	
3	理解能力	（以任何方法理解口頭語言） 0 能理解 1 通常能理解 - 可能漏解部份資料或用意 2 有時能理解 - 對一些簡單直接的溝通能作出適當的反應 3 極難或無法理解	

第D項：視力常態

1	視力	（在適當光線下和戴上眼鏡後（如需要）的視力） 0 視力適當 - 能看清細節，包括書報上的標準印刷體 1 視力有輕微不健全 - 能看清大體印刷，但看不清標準印刷體 2 視力中等度不健全 - 視力有限：無法看清報紙標題，只能認別物件 3 視力高度不健全 - 有困難認別物件，但眼睛能跟隨物件移動 4 視力嚴重不健全 - 沒有視力，或只能看到光，顏色或形狀。眼睛不能跟隨物件移動	
2	視力有限或有困難	看燈時出現光環，視覺似蒙上布幕，或燈光有閃爍的現象 0 沒有　　1 有	
3	視力減退	視力與前90天比較有所減退 0 沒有　　1 有	

第E項：情緒與行為常態

1	憂鬱，焦急或哀傷的徵象	（在30天內所觀察到的徵狀之編號，無論其形成的原因） 0 徵狀在以往30天內沒有顯現 1 徵狀在一周內曾顯現不超過5天 2 徵狀（在一星期內）每天或幾乎每天都有顯現（約6-7天）	編號
		a 情緒憂鬱哀傷，感到生活無意義，事事均不重要，毫無個人價值及想死	
		b 持續性的自我憤恨或憎恨他人 - 如容易煩躁，不滿及憎恨所給予的照顧	
		c 重覆不斷地抱怨擔慮 - 不斷的要求他人的注意及確定有關日常規律，膳食，洗衣，穿著，人際關系等事況	
		d 傷心，疼痛或憂慮的表情 - 例：皺著眉頭	
		e 反覆哭泣	
		f 逃避有興趣的活動 - 例：不喜歡較長時間的活動或與親友相處	

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2	行爲問題的徵象	在過往的7天內，被訪者有沒有顯現以下行爲上的問題。如有，被訪者能否輕易改變行爲 0 在以往7天內沒有行爲問題 1 有行爲問題，但很容易改正 2 有行爲問題，但並不容易改正	
		a 流蕩（無目的或理性的行動，似有安全上的需要）	
		b 口語上的虐待行爲（威脅，尖叫，咒罵他人）	
		c 行動上的虐待行爲（打人，推人，抓人，性侵犯他人）	
		d 社交上不適當之行爲（用噪音打擾人，尖叫，自我虐待，在公衆場合脫衣或有性行爲，亂丟食物泄物，搜人東西，重覆有問題行爲，過早起床引至打擾他人）	
		e 粗暴地拒絕他人的照顧（例：丟藥，推擋照顧者）	
3	行爲之改變	與30天前比較，被訪者的行爲問題或其家人的忍受程度均更差 0 沒有（維持一樣） 1 有	

第F項：社交功能

1	參與能力	a 被訪者能很輕鬆地與他人相處（喜歡與他人在一起） 0 能輕鬆地 1 不能很輕鬆地	
		b 能不介意地向家人或朋友表達不和或憤怒	
2	社交活動上的改變	與180日前比較，被訪者在參與社會，宗教，職能或其他活動程度上有否改變。如參與程度上有降低的現象，被訪者有否感到頹喪 0 參與沒有降低 1 參與降低，但無頹喪 2 參與降低，且有頹喪	
3	疏離感	a 被訪者每天（上午和下午）獨自在家的時間 0 沒有或絕少 1 約一小時 2 長時間-例：整上午，整晚 3 所有時間	
		b。被訪者自稱或顯現出孤獨的徵象 0 沒有 1 有	

第G項：非正式支持服務

1	兩位主要非正式協助者 首要（A） 次要（B）	首要及次要協助者的姓名 a 姓 b 名 c 姓 d 名	（A） 首要	（B） 次要
		e 與被訪者同住 0 是 1 否 2 無此協助者		
		f 與被訪者的關係 0 兒女或女婿、媳婦 1 配偶 2 親戚 3 朋友、鄰居		
		協助的範圍 0 有 1 沒有		
		g 建議或精神支持		
		h IADL		
		i ADL		

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		如有需要，願意在能力範圍內給予更多的協助： 0 超過2小時　1 每天1-2小時　2 不願意		
		j 精神上的支持		
		k IADL		
		l ADL		
2	護理者的情況	（請勾選所有適合的項目） a 其中一位護理者無法繼續照顧的活動 - 如護理者健康情況漸退而無法繼續		
		b 首要的協助者不滿意其家人或朋友所供給的支持（如被訪者的兒女們）		
		c 首要的協助者顯示出不安，憤怒或憂鬱的心情		
		d 以上均沒有		
3	得到協助的程度（以小時爲基本單位）	在過往的7天內所得到工具上和個人日常生活活動上的協助，請指出協助者是家人，朋友，或鄰居		小時
		a 一周五天內（除周末）所得到協助的總時間		
		b 周末兩天所得到協助的總時間		

第H項：生理功能（IADL及ADL自我執行的表現）

1	IADL自我執行的表現-過往7天裏在家中或社區內日常生活功能的錄號 （A）IADL自我執行表現的編號（過往7天表顯的錄號） 0 獨立 - 自我完成 1 需部分協助 - 有時需要幫忙 2 需完全協助 - 完全需要幫忙 3 別人代完成 - 需要別人代替執行 8 沒有此項活動 （B）IADL 困難程度編號（如被訪者需要自我完成活動的困難程度） 0 沒有困難 1 有些困難 - 如需人幫忙，行動緩慢或易疲倦 2 有很大困難 - 如無法做或只能做一點		（A）	（B）
a	準備膳食	煮用膳食方面（例：安排餐食，煮食，菜的分類，食具的擺設）		
b	普通家務	處理普通家務的工作（例：洗碗，抹塵，鋪床，收拾，洗衣）		
c	財物管理	處理帳單，平衡帳數及家常開支		
d	藥物處理	處理藥物（如記得吃藥，打開藥瓶，吃對藥量，給自己打針，搽藥）		
e	打電話	打與接電話（需輔助器，如大號碼鍵盤，擴聲器）		
f	購物	購買食物和家庭用品（例：選物及付款）		
g	交通	使用交通工具（例：如何到達步行以外的距離）		
2	ADL自我執行的表現 - 以下是有關被訪者在過往的7天內在日常生活活動上的能力，例如穿衣，用膳（包括每次有此活動）。對那些能獨立執行某項活動者，請決定及記錄是否有人鼓勵，或在場監管活動 0 獨立 - 無需協助或監管，或在7天內需少於1至2次的 1 需監督 - 要人留意，鼓勵或提示3次或以上，或需受指導3次或以上和在7天內接受1至2次行動上的協助 2 有限的協助 - 被訪者能參與活動；在需指示下的手腳移動或不需要承受力的活動上接受3次或以上行動上的協助			

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	3 大量的協助 - 能執行一部分的活動，但在過往7天內，以下的活動需要3次或以上的協助： - 承力活動上需要支持，或 - 在7天的一部分日子內（非全7天），完全需要他人代替執行 4 完全依賴 - 在7天內每天都需他人代替執行 8 沒有此項活動發生（不計能力與否，過去7天沒機會發生）		
a	床上之活動能力	包括睡下和起床，翻身及肢體移位	
b	移動的能力	包括來往兩位之間的能力 - 如上下床，椅子，輪椅，和站立（不包括去廁所和浴缸）	
c	在家的活動能力	如果坐輪椅，其自顧性如何	
d	穿衣方面的能力	包括將衣服從衣櫃拿出，擺放、穿上和脫下	
e	進食能力	包括用任何方法進食，導管喂食也算	
f	如廁的能力	包括使用廁所、便盆、尿壺，坐上或離廁盆，如廁後自我清理，換理成人尿片，處理特別的裝製（人工造口或導尿管），和整理衣服	
g	處理個人衛生	包括梳頭、刷牙、剃鬍子、化裝、洗臉洗手、清潔私處（不包括洗澡的能力）	
3	洗澡	在過去7天（包括淋浴、坐浴、擦澡，但不包括洗背後或頭髮） 0 完全獨立，能自己做　1 需監督 - 只需他人在旁留意 2 只需要在移動方面得到協助　3 洗澡時的一部分活動需要協助 4 完全依賴　8 沒有此項活動發生	
4	主要的活動方式	0 沒有協助器具　1 拐杖　2 助行器 3 電動椅　4 輪椅　5 沒有此活動 a 室內 b 戶外	
5	上落樓梯	過去7天，被訪者如何上下樓（例：上單階或雙階，使用扶手）。如不用樓梯，記錄如需要時其能力 0 上下樓都不需輔助 1 上下樓需要輔助 2 不需要上下樓梯 - 如需要可不用輔助 3 不需要上下樓梯 - 如需要則要輔助 4 不需要上下樓梯 - 沒有能立 5 不知道 - 不需要上下樓梯，也無法評估其能力	
6	活力狀況	a 在過去30天裏一個典型的一周，被訪者有多少天有出門（無論時間長短） 0 每天　1 一周有2-6天 2 一周有1天　3 沒有出外 b 過去7天所做的體力活動（例：走路，清掃房子，運動） 0 兩小時以上　1 兩小時以下	
7	活動功能的潛質	a 被訪者相信自己能增強活動能力（ADL，IADL，移動能力）	a
		b 照顧者相信被訪者能增強活動能力（ADL，IADL，移動能力）	b
		c 復原的可能性良好，身體健康	c
		d 以上均沒有	d

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第I項：過去14天的失禁情形

1	膀胱失禁情形	在過去的14天內控制小便的能力（有導尿管或失禁治療均算）《注：如有遺尿，情況以不漏濕內褲爲準》 0 無失禁-完全受控制 1 通常無失禁 - 1週內失禁1次或少於1次 2 有時失禁 - 1週有2次或以上的失禁，但非每天 3 常失禁-每天失禁，有時可受控制 4 失禁 -不能受控，每天有多次失禁情形	
2	控制膀胱的辦法	（將適用的全部選出） a 使用成人尿片或內褲來防止漏濕 b 使用內置式的導尿管 c 以上均沒有	a b c
3	大便失禁情形	在過往14天內，排便的控制情況（如果用輔助物或給予治療也算） 0 無失禁-完全受控制　1 通常無失禁 - 至少每週有大便失禁一次 2 有時失禁 - 每週有大便失禁　3 常失禁 - 每週有2-3次大便失禁 4 失禁 - 大便不能受控	

第J項：疾病診斷

以醫生診斷的疾病及足以影響被訪者的身體、需要治療、或控制病徵等疾病爲準。同時包括需要任何醫療人員監督的病況，或導致前90天曾入院的病因。

1	疾病名稱	心臟、循環系統疾病： a。中風 b。心力衰竭 c。冠心病 d。高血壓 e。心跳不均 f。周圍末稍性血管疾病 神經系統疾病： g。亞氏老年癡呆症 h。老年癡呆症（非亞氏） i。腦震蕩 j。多發性硬化症 k。柏金遜氏病 肌肉及骨骼系統病： l。風濕 m。臀部骨折 n。其他骨折（例：手腕、腰背） o。骨質疏鬆症		視力： p。白內障 q。青光眼 精神和心情狀態： r。任何精神病 感染性疾病： s。愛滋病 t。肺炎 u。肺結核 v。尿道炎（過往30天） 其他疾病： w。癌症（過往5年）- 不包括皮膚癌 x。糖尿病 y。肺氣腫、慢性阻塞性肺病、哮喘 z。腎衰竭 aa。甲狀腺疾病	
2	其他近期或詳細的診斷（ICD-9 codes）	a _____ b _____ c _____ d _____		_____.___ _____.___ _____.___ _____.___	

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第K項：健康狀況和疾病預防處理

1	疾病預防	（將適用的全部選出）	
		a 量血壓	a
		b 流行感冒防疫針	b
		c 女性：乳房檢查或X線照片	c
		d 以上均沒有	d
2	以下問題出現超過兩天	（在1週的2天內的情況都選出）	
		a 腹瀉	a
		b 小便困難或頻尿（晚上3次或以上）	b
		c 發燒	c
		d 胃口不佳	d
		e 嘔吐	e
		f 以上均沒有	f
3	上週出現的問題	（在1週內任何出現的情況都選出）	
		生理健康：	
		a 痰量的改變	a
		b 胸部痛或有壓迫感（用力或靜坐時）	b
		c 便秘（7天中有4天）	c
		d 頭昏或腳輕浮感	d
		e 水腫	e
		f 氣促	f
		心理健康：	
		g 妄想	g
		h 幻覺	h
		i 以上均沒有	i
4	疼痛情況	a 經常表示疼痛或顯示疼痛（過往7天內） 0 沒有疼痛（跳去K4e） 1 少於每天疼痛 2 每天疼痛	a
		b 疼痛通常都是強烈 0 否 1 是	b
		c 疼痛強度以至影響日常生活 0 否 1 是	c
		d 疼痛的特性 0 沒有疼痛 1 局部疼痛 - 1處 2 多處疼痛	d
		e 以藥物控制疼痛 0 沒有疼痛 1 藥物不能控制 2 藥物能部分或全部控制疼痛	e
5	跌倒的頻率	在過去180天內跌倒的次數 如沒有，填0；如超過9次，填9	
6	跌倒的危機	a 步伐不穩 0 否 1 是	
		b 被訪者因怕跌倒而限制自己外出（例：停止使用交通工具、有人相伴才出外） 0 否 1 是	

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7	生活狀態（喝酒、吸煙）	a 前90天內，被訪者自覺或被要求減少酒量，或他人擔心其喝酒的情況 0否 1是	a
		b 前90天內，被訪者早上起床必須喝酒來疏緩神經，或因喝酒而惹麻煩 0否 1是	b
		c 在一個典型的一週內，記錄下被訪者有幾天(0-7)需喝一杯酒或以上	c
		d 在喝酒的日子裏，平均沒天要喝幾杯（0等于無，9等于9杯或以上）	d
		e 每天抽煙或嚼煙草 0否 1是	e
8	健康狀況的指標	被訪者自覺身體不健康（當問及）	a
		患有的病情而引至認知能力，ADL，情緒或行爲不穩定（改變、不定、或減弱）	b
		正在經歷病情或慢性病的復發	c
		治療過程因前30天內有突發的急症發生而需改變	d
		斷症只有6個月性命-例：醫生告訴被訪者或其家人此乃末期病症	e
		以上均沒有	f
9	其他身體狀況指標	害怕某個家人或護理者	a
		一向衛生情況不良	b
		有不明原因之傷處，骨折或燙傷	c
		被忽視，虐待或不良對待	d
		行動受克制（如肢體受綁，被綁在床上或椅子）	e
		以上均沒有	f

第L項：營養及身體具足夠水分情況

1	體重改變	在過往30天內，在沒有刻意的情況下，體重減輕百分之5，或在過往180天內，體重減輕百分之10 0否 1是		
2	進食	a 在前7天內，有4天或以上，一天的進食只有一餐或以下 0否 1是		
		b 在前3天內，食物及液體的進食有明顯的降低 0否 1是		
		c 水分不足 - 在前3天內沒有或幾乎沒有進食任何液體 0否 1是		
3	營養治療	A處理編號 0不需要 1自己處理 2一部分需他人處理 3完全需他人處理		
		B正式治療的日數	(A) 處理	(B) 日數
		a 吊鹽水-補充水分（非TPN）		
		b 進食液體		
		c 靜脈輸用養料（TPN或脂肪）		
		d 腸內輸用養料		

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第M項：牙齒狀況（口腔衛生）

1	口腔和牙齒狀況	（選擇所有適用的）	
		咀嚼或吞嚥有問題	a
		進食時口腔乾燥	b
		刷牙時或假牙有問題	c
		以上均沒有	d

第N項：皮膚狀況

1	皮膚問題	在前30天內皮膚上有問題或改變（如燒傷、瘀傷、紅疹、癤子、癬） 0 否　　1 是			
2	潰瘍（壓力或循環問題引至）	身體任何一處有潰瘍。潰瘍分類爲四階段： 階段1 - 皮膚持久性紅腫 階段2 - 一部分皮層脫落 階段3 - 皮膚損傷凹陷 階段4 - 皮膚破裂露出肌肉或骨頭 如沒潰瘍，記爲0，如有，記錄下其最嚴重的階段（1-4）			
		a 壓力潰瘍 - 任何因壓力、擦力而引至皮下層受損的潰瘍症			
		b 缺血潰瘍 - 下肢因血液循環不良而引發成傷口			
3	其他需要治療的皮膚病	（選擇所有適用的） a 燒傷（2至3度） b 傷口 - 除潰瘍、紅疹、刀傷以外（例：癌） c 皮膚損爛或刀傷	a b c	手術傷口： d 胸 e 腹 f 手腳 g 其他 h 以上均沒有	d e f g h
4	潰瘍已復原後的病史	被訪者曾經在身體一處患有潰瘍 0 否　　1 是			
5	傷口、潰瘍的處理	A 處理編號 0 不需要　1 自己處理　2 一部分需他人處理　3 完全需他人處理 B 正式治療的日數			（A）處理　（B）日數
		a 抗生素 - 內服或外搽			
		b 包扎紗布			
		c hyperbaricoxygen高壓氧			
		d 減輕壓力器具			
		e 補充營養或水分治療			
		f 翻身移動			
		g 清除壞死組織			
		h 手術傷口處理			
6	足部問題	（選擇所有適用的） a 雞眼、繭、足型問題、感染、霉菌（香港腳） b 腳部傷口 c 在過往90天內足部沒有被他人或自己檢查過 d 以上均沒有			a b c d

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第O項：環境檢查

1	家居環境 （選出任何一項導致家居不安全或不適合居住的情況[如果沒有一項適用，選"以上均沒有"一欄；如被訪者暫時住院，請根據家訪的資料而定）]	夜間照明設備(包括在客廳、睡房、廚房、廁所、走廊的燈光不足或缺乏)	a
		地板及地毯（例：地板有洞，活動範圍有電線，地毯散落）	b
		洗手間（如廁所不能沖水，水管滴漏，需要扶持處沒有扶手，浴缸濕滑，廁所在家外）	c
		廚房（例：爐子不安全，冰箱不能用，有老鼠或蟲蟻滋生）	d
		冷暖氣設備（例：夏天太熱，冬天太冷，有哮喘者家中卻用燒木之暖爐）	e
		個人安全(例:怕有暴力,到信箱或鄰居處有安全問題、家外交通繁忙)	f
		進出門口（例：進出門有障礙）	g
		通往屋內的房間（例：無法爬樓梯）	h
		以上均沒有	i
2	居住安排	a 與90天前比較，被訪者現與他人同住-例：搬到他人之家或他人搬進 0 否　　1 是	
		b 被訪者或其主要護理者認爲被訪者應搬到另外一個居住環境 0 否　　1 只有被訪者認爲 2 只有照顧者認爲　　3 被訪者與照顧者雙方均認爲	

第P項：醫療及社區服務的使用

1	醫療及社區服務 （以每10分鐘爲單位計算）	在過往14天所接受的服務性質及範圍	本機構 (A) (B) (C) 天 小時 分	其他機構 (D) (E) 小時 分	
		a 家居醫療護理	a		
		b 社康護士	b		
		c 家居助理	c		
		d 膳食	d		
		e 義工服務	e		
		f 物理治療	f		
		g 職業治療	g		
		h 語言治療	h		
		i 日間托護或日間醫院	i		
		j 社會工作者探訪	j		
2	特殊醫療及治療項目	在過往14天所接受的特殊醫療治療及活動項目（在家或醫院門診均可），和遵守服務時間表的程度 0 此欄不適用 1 有預約時間治療和完全遵守療程表 2 有預約時間治療和遵守部份療程表 3 有預約時間治療但沒有接受治療 醫療項目： a 酒癮及毒癮治療 b 輸血 c 癌症化學療法 d 心臟康復治療 e CPAP f CAPD			

2	特殊醫療及治療項目	g 洗腎 h 心臟監測器 i 靜脈注射 -中央靜脈注射 j 靜脈注射 -（不含 saline 或 heparin） k 注射 打針 l 腹部造口治療護理 m 純氧治療 -間歇性 n 純氧治療 -連續性（氧氣濃縮器） o 純氧治療 -連續性（其他） p 放射療法 q 輔助呼吸器 r 氣管造口治療護理 s 呼吸器 治療項目： t 運動治療 u 職業技能治療 v 物理治療 w 呼吸治療（包括吸取，IPPB） 護理項目： x 日間護理中心 y 日間醫院 z 善終服務 aa 看醫生或去診所 bb 老人暫住服務 特別家居服務： cc 每日有護士看護（例：心電圖，排尿量） dd 少過每日有護士看護 ee 手腕緊急或電子警惕器，或救命鐘 ff 皮膚治療 gg 特別膳食治療和營養 hh 其他	
3	儀器使用	處理方法編號： 0 不需儀器 1 自行使用 2 如儀器已擺放出來或有口頭提示，可自行使用 3 部份需別人協助 4 完全需別人協助 a 純氧儀器 b 靜脈注射 c 導尿管	
4	在過往的90天內住醫院或往急症室次數	如沒有，記錄爲0，超過九次則以9次算 a 住醫院超過一晚之次數 b 往急症室（不過夜）之次數 c 緊急醫療服務 - 包括沒有預約的護士、醫生或治療服務（往醫療場所或在家）	a b c
5	治療的目標	在過往90天內，有否達到任何一項治療的目標？ 0 否　　1 有	
6	在所需照顧上的整體改變	與90天前比較，自我照顧的情況整體上有顯注的改變 0 沒有改變　1 情況好轉，接受支援量減少 2 情況轉壞，接受支援量增多	
7	得失衡量	因爲資源不足，在上一月內，被訪者在衡量過得失後，決定選擇或放棄任何以下的事例：處方藥物，所需的醫療服務，足夠的食糧，足夠暖氣，家居護理 0 否　　1 有	

第Q項：藥物

1	藥物的種類	記錄下在前7天內被訪者使用幾種不同的藥物（醫生開處方或自行購買），包括眼藥水。按時或偶爾服用《如沒有，計0，如超過9種以9計》	
2	使用精神鎮定藥物	記錄下在前7天內所用的精神鎮定藥物《檢查被訪者用的藥物，以下面的種類來分類》 0否　　1有 a 抗精神病藥物 b 抗焦慮藥物 c 抗憂鬱症藥物 d 安眠藥物	a b c d
3	醫療監督	在過往180天內，有醫生檢查被訪者的藥物 0至少與一位醫生談論過（或沒有用藥） 1藥物沒有醫生檢查過	
4	服從醫生指示及依時服藥	完全或幾乎完全服從服用醫生所開的藥(在看醫生時或看之間) 0完全服從 1百分之80或以上時間服從 2少於百分之80時間服從 3沒有用藥	
5	記錄所有的藥物	記錄在過去7天醫生所開處方和自己在藥房買的藥 _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	

Appendix C

Supplementary Questionnaire (English)

Supplementary Questionnaire

(Please Check the reporting format and Circle the question applied after completion)

☐ **Self Report-** I II III IV V VI VII ☐ **By Proxy** - I II III IV V VI VII

I. Which one of the following categories accurately describes your ability to use the English Language?

	Fluent	Know Some	Non-fluent
	1	2	3
a. Written English.....	_	_	_
b. Spoken English.....	_	_	_

II. How long have you been living in Canada or other primarily English speaking countries?

Number of years: ___ years ___ months
Left home country in 19 _ _

Country immigrated from _____

III. I would like to discuss your general lifestyle, the language that you prefer to speak, your interests and reading habits. For each of the following statement, which category best describes you. The categories are .....

(Please provide a cue card for the categories)

Chinese Only	Mostly Chinese Some English	Both Chinese And English In Equal Amount	Mostly English Some Chinese	English Only
1	2	3	4	5

In general .....

	Chinese Only		Both		English Only
	1	2	3	4	5
1. If you are at home, you speak					
2. If you are at work, you speak.....					
3. If you can choose, you prefer to speak.....					
4. When your parents talk to each other, they speak.....					
5. When your children talk to each other, they speak.....					
6. Before age 18, your friends were.....					
7. Your friends today are.....					
8. Your music preference is.....					
9. Your movie preference is					
10. Your food preference is.....					
11. You prefer to think in.....					
12. You prefer to write in.....					
13. You prefer to read in					

IV. I would like to ask if you have or have had any of the following health conditions or symptoms **in the past year**? For the conditions or symptoms you have experienced I would like to ask what type of health care you have used or relied on? Choose ONE category that best describes your preferences for treatment.

The categories are .....

(Please provide a cue card for the categories)

TCM Only	Mostly TCM Some Western Treatment	Both TCM & Western Treatment In Equal Amount	Mostly Western & Some TCM	Western treatment Only	Do Nothing
1	2	3	4	5	6

Traditional Chinese Medicine (TCM) and Western medicine treatments can include home remedies, over-the-counter medicines, western prescription drugs, or doctor's visit. Traditional Chinese Medicines can be in two forms: HERBAL FORM (including tonics and animal products), or PROPRIETARY FORM (including pills, tablets, capsules, powder, drinks, oil, ointment, or plasters).

Do you have or have you had.....

	NO	IF YES	TCM Only 1	2	Both 3	4	Western Only 5	Do Nothing 6
Diseases /Conditions								
1. High blood pressure.....								
2. Coronary artery disease								
3. Stroke								
4. Diabetes								
5. Chronic lung disease								
6. Chronic Kidney /Gall Stone disease..								
7. Allergies								
8. Arthritis								
9. Bone fractures								
10. Osteoporosis								
11. Skin disease								
12. Dementia								
13. Peptic ulcer								
14. Glaucoma/ Cataracts								
Symptoms								
15. Stomachache								
16. Poor appetite								
17. Tooth & gum problem								
18. Headaches								
19. Dizziness								
20. Pain								
21. Cold /Cough or Sore Throat								
22. Constipation								
23. Fatigue								
24. Loss of memory								
25. Nervousness								
26. Sleeping problems								

V. Do you take TCM for reasons other than as a treatment (e.g. use it as a tonic or other health promoting purposes)?

Yes.....
No.....

VI. How much do you agree or disagree with all of the following sentences. Choose the category that best corresponds to your feelings. The categories are .....

(Please provide a cue card for the categories)

Strongly Disagree	Moderately Disagree	Neither Agree Nor Disagree	Moderately Agree	Strongly Agree
1	2	3	4	5

In general .....

	Strongly Disagree 1	2	3	4	Strongly Agree 5
1. Illnesses are caused by internal yin-yang imbalance					
2. Illnesses are caused by external imbalance (e.g. infectious bacteria)					
3. Going out in cold wind results in headache/cold					
4. Strong anger/ rage poisons one's blood					
5. A cold or flu should be treated with a hot liquid, not medicine					
6. Taking vitamins or supplements is essential to good health...					
7. I use TCM, not Western medicine for minor health problems.					
8. I use Western medicine/ services, not TCM for major health problems					
9. I use TCM, not Western medicine for my chronic illnesses...					
10. I use Western medicine, not TCM for my acute illnesses.....					
11. Combining Western medicine and TCM can get most effective treatment results.....					
12. TCM is less harmful to one's body than Western medicine...					
13. I would try TCM for incurable illnesses					

VII. Where do you obtain the knowledge on TCM properties

	NO	YES
a. TCM doctor	_	_
b. Chinese Western doctor	_	_
c. non-Chinese Western doctor	_	_
d. TCM herbal store retailer	_	_
e. general /grocery store retailer	_	_
f. families or friends	_	_
g. others _____	_	_

(If the respondent does not use any forms of TCM, then terminate here. Otherwise, continue with the questions)

VIII. How often do you consult a TCM doctor before using any TCM

a. always	_
b. usually	_
c. sometimes	_
d. never	

IX. Where do you get your TCM

	NO	YES
a. TCM doctors	_	_
b. TCM herbal stores	_	_
c. health food stores	_	_
d. general /grocery stores	_	_
e. family or friends	_	_
f. overseas	_	_
g. others _____	_	_

Appendix D

Supplementary Questionnaire (Chinese)

附加問卷

□自答-I II III IV V VI VII □助答-I II III IV V VI VII

I。以下那一項正確地描述你的英語能力？

	流利 1	稍懂 2	不流利 3
a. 書寫。。。。。。。。	□	□	□
b. 會話。。。。。。。。	□	□	□

II。你在加拿大或其他主用英語國家共住了多少年？

總年數：___年___月
19__ __年離開原生地

III。以下的問題是有關你日常生活形態，慣用語言，你的嗜好及閱讀習慣等問題。在以下五個小項目中，請選出最適合你的一項。五個小項目詳列如下。。

全是中文	大部份是中文 小部份是英文	中英文並用 兩者一樣多	大部份是英文 小部份是中文	全是英文
□	□	□	□	□
1	2	3	4	5

大致上。。。。。。。。。。	全是中文 1	2	中英並用 3	4	全是英文 5
你在家講。。。。。。。。。。。。。。。。。。。。	□	□	□	□	□
你在工作地點講。。。。。。。。。。。。。。。。。	□	□	□	□	□
你比較喜歡與別人講。。。。。。。。。。。。。。。。	□	□	□	□	□
你的父母彼此說話時講。。。。。。。。。。。。。。。	□	□	□	□	□
你的兒女彼此說話時講	□	□	□	□	□
你十八歲以前交的朋友講	□	□	□	□	□
你現在的朋友講	□	□	□	□	□
你喜歡聽的音樂是	□	□	□	□	□
你喜歡看的電影是	□	□	□	□	□
你喜歡吃的食物是	□	□	□	□	□
你思考時喜歡用的語言是	□	□	□	□	□
你書寫時喜歡用的語言是					
你閱讀時喜歡用的語言是					

IV。以下的問題，答案分爲兩部分。第一部分，我將會問你有否在過去一年內有過以下的疾病或症狀。如有，第二部分將問你所使用過的治療方法。

在第二項，以下的小項目是用於描述不同的治療方法。請選擇最適合你的一項目。項目詳列如下：

只用中醫	中醫療法爲主 西醫療法爲副	中醫療法與西 醫療法並用	西醫療法爲主 中醫療法爲副	只用西醫	什麼都不用
1	2	3	4	5	6

中醫或西醫治療包括家傳秘方，藥房自購，西藥配方或醫生看病。
中藥可分爲兩類：草藥類（包括補藥及動物產品）或成藥類（包括丸、片、露、粉、露、油、膏或貼）。

		只用中醫	中西並用			只用西醫	不用
	否 有	1	2	3	4	5	6
疾病：							
1。高血壓							
2。心臟病							
3。中風							
4。糖尿病							
5。慢性肺病							
6。慢性腎病、膽結石							
7。敏感							
8。風濕關節炎							
9。骨折							
10。骨質疏鬆症							
11。皮膚病							
12。癡呆症							
13。胃病							
14。青光眼、白內障							
症狀：							
15。胃痛							
16。胃口不佳							
17。牙齒及牙齦問題							
18。頭痛							
19。頭昏							
20。疼痛							
21。感冒、咳嗽或喉嚨痛							
22。便秘							
23。疲倦							
24。記憶不佳							
25。神經問題							
26。睡眠問題							

V。請表示你同意以下各問題與否。選擇最能描述你的看法的一項。項目詳列如下：

堅決不同意	有些不同意	豎不同意 也不贊成	有些同意	堅決同意
1	2	3	4	5

	堅決 不同意 1	2	3	4	堅決 同意 5
1。疾病是因體內陰陽失調而造成					
2。疾病是因外在因素失調而造成（如病毒、細菌）					
3。出外吹冷風會引起頭痛感冒					
4。動怒發脾氣易引起體內血中毒					
5。感冒應以喝熱飲料治療，不是吃西藥					
6。吃維他命或補品是保健基本之道					
7。當我生小病時，我是用中藥療法，不是用西藥療法					
8。當我生大病時，我是用西藥療法，不是用中藥療法					
9。當我有慢性疾病時，我是用中藥療法，不是用西藥療法					
10。當我有急性疾病時，我是用西藥療法，不是用中藥療法					
11。合並使用中西式療法可以截長補短，得到最好的治療效果					
12。中藥療法對身體的傷害比西藥療法少					
13。對不治之病我會使用中藥療法					

VI。除了治病以外，你有沒有用中藥於其他的用途（例：補身壯體）

有。。。
沒有。。

VII。你對中藥的認識是從那裏來的？

	否	是
a。中醫。。。。。。。。。。。。。。	_	_
b。中國人西醫。。。。。。。。。。。	_	_
c。本地西醫。。。。。。。。。。。。	_	_
d。中藥店。。。。。。。。。。。。。	_	_
e。普通商店。。。。。。。。。。。。	_	_
f。其他_____。。。。。	_	_

（如被訪者不用中藥，請在此終止。如用中藥請繼續）

VIII。你用中藥前有否詢問中醫的意見

a.每次。。。。。。。。。。。。。	_
b.通常。。。。。。。。。。。。。	_
c.有時。。。。。。。。。。。。。	_
d.不曾。。。。。。。。。。。。。	_

IX。你在那裏得獲中藥

	否	是
a。中醫。。。。。。。。。。。。。。	_	_
b。中藥店。。。。。。。。。。。。。	_	_
c。西式健康食品店。。。。。。。。。	_	_
d。普通商店。。。。。。。。。。。。	_	_
e。家庭或朋友。。。。。。。。。。。	_	_
f。海外。。。。。。。。。。。。。。	_	_
g。其他。。。。。。。。。。。。。。	_	_

Appendix E

Health and Medication Use Study - LETTERS and FORMS

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1

Faculty of Applied Health Sciences
Department of Health Studies
and Gerontology
519/885-1211 or 519 888-4907
Fax 519 746-2510

Dear Dr.

On behalf of the University of Waterloo, the Central Ontario Chinese Cultural Centre (COCCC), and the Waterloo Regional Home Care Program, we are requesting your participation in an international study on Health and Drug Utilization among Chinese elderly, specifically to **identify Chinese elderly patients in your caseload**.

This study is the second phase of a nationally funded 3-year project by Health Canada (the National Health and Research Development Program). For the first phase, a report has been submitted for publication on Sales and Labelling of Traditional Chinese Medicine. For the second phase, we will examine health issues and drug use by Chinese elderly in different regions in Canada, Taiwan and Hong Kong. Also, we want to find out what services COCCC can offer to enhance the quality of life of our elders. The findings of this large scale project will contribute to an in-depth understanding of the health of Chinese elderly, and how it compares across cultures, regions, and countries.

Our target population is **Chinese elderly age 65 and over** (Chinese born locally or immigrated from any Asian countries, healthy and disabled). Your help is imperative in the identification of these individuals. We would appreciate if you could **select those patients in your caseload, inform them about this study, and most importantly, invite them to participate**. We understand the added work this project might bring, therefore, to ease your task, we have enclosed a sample letter-to-the-patient. More copies will follow should you decide to participate.

The data collection procedure involves a face-to-face interview at the patient's convenience. The interview will be conducted by a qualified interviewer recognized by the University. **All information will be kept in strict confidence, and no patient chart review is necessary**. This study has received ethics approved through the Office of Human Research and Animal Care at the University of Waterloo. If you have any questions or concerns about your participation in this study, you may contact Susan Sykes in the Office of Human Research at 888-4567 ext 6005. Your involvement is essential to the successful completion of this project, and is sincerely appreciated. We will officially acknowledge your generous effort in any reports or scientific publications that arise from this project.

Thank you again for your attention. Ms. Erin Tjam will call you shortly to set up an appointment and discuss any concerns you may have.

Sincerely,

Erin Y. Tjam, M.H.Sc.
Community Health Researcher
Speech-Language Pathologist

John P. Hirdes, Ph.D.
Associate Professor, University of Waterloo
Research Director, Providence Centre

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1

Faculty of Applied Health Sciences
Department of Health Studies
and Gerontology
519-885-1211 or 519-888-4567
Fax 519-746-2510

來自您醫生的一封邀請信 .....
An Invitation from Your Doctor.....

Dear

滑鐵盧大學，安省中部中華文化中心以及滑鐵盧家居護理服務三大機構，誠意邀請閣下參與一項名爲「華人健康及使用中西藥調查」的學術性研究。這項研究是由加拿大聯邦衛生部及中華文化中心所資助。所有居住在KW區的耆老均被邀請參與。敬請閣下踴躍支持。

參與過程簡單，閣下將會於十一月至十二月間接受一次爲時約1至2小時的訪問。訪問關注於健康狀態及需求，同時亦希望了解到中華文化中心能如何改進對耆老的服務。訪問地點及時間均可由閣下決定（地點可於府上，教堂或滑鐵盧大學）。這項調查所得的資料將完全保密。閣下有權拒絕回答問卷中的任何問題，也有權終止訪問。所有資料將只會用於學術性研究。此調查已獲得滑鐵盧大學審核及批準。

閣下收到此封邀請信後，如同意參與或有任何疑問，請致電詹越, Erin Tjam, 電話：888-4567 內線 5365，或於傍晚至電 725-3674。如感不便，大學研究組將會有負責人以電話聯絡，回答閣

We are cordially requesting your participation in a National study on the health and drug use of Chinese elderly. This study is funded by Health Canada and the Central Ontario Chinese Cultural Centre (COCCC), and is conducted by the University of Waterloo, the COCCC, and the Waterloo Regional Home Care.

Your task involves completing a health interview conducted by a qualified interviewer at you own home (or any other place of your choice, e.g. Church, University etc.), and at your convenience between November and December, 1996. The interview should take between 1 to 2 hours. The content of the interview will focus on health evaluation and health needs. Further, we would like to know how COCCC can plan its events to better serve you. All information which you provide will be held in confidence. You can choose to answer or refuse any of the questions, or to terminate the interview at anytime. This project has received ethics approval from the University of Waterloo.

Shortly after receiving this letter, should you decide to participte, or if you have any questions, please contact Erin Tjam at 888-4567 ext. 5365, or 725-3674 at night.

下任何的疑問以及安排訪問時間。

此項調查是聯邦政府首次資助的國際性華人健康及用藥研究，閣下的參與能直接影響到研究成果的質素。準確資料將能協助研究成功以及改善華人社區及健康福利，謹請參與。

在此衷心感謝閣下對此研究的支持。

We strongly encourage that you support this study, as it can contribute significant to the health of the Chinese elderly, and help the Canadian government to better understand the needs of Chinese people in order to plan more appropriate health services.

Thank you in advance for you participation.

_____

Dr.

研究負責人：

詹越 博士生
研究師
語言病理師

何迪斯博士
滑鐵盧大學副教授

Research Investigators:

Erin Y. Tjam, Ph.D. candidate
Community Health Researcher
Speech-Language Pathologist

John P. Hirdes, Ph.D.
Associate Professor, University of Waterloo
Research Director, Providence Centre

安省中部中華文化中心

CENTRAL ONTARIO CHINESE CULTURAL CENTRE

200 Victoria St. North, Kitchener, Ont. N2H 5C6
Tel./Fax: 576-6168



詹越
Erin Tjam

安省中部中華文化中心極力支持詹越女士所負責的一項名爲「華人健康及使用中西藥」的研究調查。本會認爲這項研究對改善加國華裔人仕的健康狀況以及提供更完善的社區醫療和保健服務，將有重大的貢獻。謹請閣下參與問卷調查，提供資料，以協助研究工作成功。

This letter is to confirm that Ms. Erin Tjam is conducting a community project entitled " Health and Drug Utilization Patterns among Chinese Elderly". The Central Ontario Chinese Cultural Centre (COCCC) supports this project fully. We believe that this research study can help in the understanding of health status and needs of Chinese. and the provision of health care service in the community. We strongly encourage you to participate and to provide as much information as possible to make this research a success. Thank you.

Yours truly.

Stephanie K.M. Hong
President 95-96
Central Ontario Chinese Cultural Centre

湯陳嘉敏謹上
中華文化中心
96-97年度會長

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1

Faculty of Applied Health Sciences
Department of Health Studies
and Gerontology
519/885-1211 or 519/888-4567
Fax 519/746-2510

Consent Form

I agree to participate in a survey being conducted by Ms. Erin Tjam of the Department of Health Studies and Gerontology under the supervision of Professor John P. Hirdes. I have made this decision based on the information I have read in the covering letter and have had the opportunity to receive any additional details I wanted about the study. As a participant in this study, I realize that I will be asked to take part in a one hour questions, if I so choose. All information which I provide will be held in confidence and I will not be identified in any way in the final report. I understand that I may withdraw this consent at any time by asking that the interview be stopped. I also understand that this project has been reviewed and received ethics approval through the Office of Human Research & Animal Care at the University of Waterloo and that I may contact this office if I have any concerns or questions about my involvement in this study.

同意書

本人同意參與此項由滑鐵盧大學主辦的問卷調查。這個決定是根據所收到之邀請信內所提供的資料，如有需要本人亦有機會得取附加的資料。本人明白此問卷將會需時約一小時，所有提供的資料將會絕對保密，而本人的姓名將不會在總結報告書內被透露。本人有權隨時終止此項問卷調查，亦明白到此項研究已經滑鐵盧大學所批準。如有問題，本人可致電滑鐵盧大學詢問有關詳程。

Participant's Name:
被訪者姓名：_____

Participant's Signature:
被訪者簽署：_____

Name of Witness:
見證人姓名：_____

Signature of Witness:
見證人簽署：_____

Date:
日期：_____

Appendix F

Assessor Training Package

Interviewer Training Objectives

- ***Be familiar with the project***
- ***Obtain informed consent***
- ***Follow the data collection & submission procedures***
- ***Collect accurate & reliable information***
- ***Know who to contact if a problem or question arises***

Interviewer Training Agenda - Day 1

- *Introduction and Overview*
- *Project Overview - Erin*
- *MDS-HC Training - Erin & Nancy*
- *Dinner*
- *MDS-HC Training (cont...)*
- *Supplementary Questionnaire Training - Erin*
- *Interviewing Techniques - Erin*
- *Field Test*

Interviewer Training Agenda - Day 2

- ***Forms Revisions - Interviewers***
- ***MDS-HC Test Cases***
- ***Break***
- ***MDS-HC Questions & Answers - Nancy & Erin***
- ***Supplementary Questionnaire Questions & Answers - Erin***
- ***Break***
- ***MDS-HC Brief Review of CAPs - Nancy***
- ***Round-up***

Consent Process

1. *Interviewer will telephone the client to determine interest in participation, then arrange an appointment time*
2. *Prior to assessment, determine competency to provide informed consent, check with family member if uncertain. If there is question to client's ability to provide informed consent, obtain proxy consent prior to the assessment*
3. *Read the information letter and consent form to the client, or to caregiver if there is a concern with the competency*
4. *Reassure client of confidentiality*
5. *Provide reassurance that the client can refuse to participate in any part, or the whole study*
6. *Ask if there are any questions*
7. *Obtain client signature and witness the form*
8. *Make sure that client has a copy of the information letter, highlighting the contact people*
9. *Return the consent forms with the completed assessment forms to Erin Tjam at U of W*

Data Collection Process

1. *Arrange appointment with client*
   - *attempt at least 3 tries at different times during the day*
2. *Obtain informed consent*
3. *Complete assessments*
4. *Submit completed assessments to Erin Tjam at U of W*
5. *Deadline for completion of total sample is December 2nd 1996*

Key Contacts

- ***Erin Y. Tjam - Principle Investigator***
- ***Nancy Curtin-Telegdi - MDS-HC Trainer & Clinical Field Support***
- ***Dr. John P. Hirdes - Associate Professor & Director of Research***

Interviewers

- ***Setling Lau - Cantonese & Mandarin***
- ***Patricia Lee - Cantonese***
- ***Celia Wong - Cantonese***
- ***Qin-Fang Xie -Mandarin***
- ***Lan Yu - Mandarin***

Appendix G

TCM Survey Letter of Invitation

中藥零售商調查
邀請信

A Survey of Retailers Distributing Traditional Chinese Medicines
Letter of Invitation

Dear Sir/Madam,

On behalf of the University of Waterloo, Grand River Hospital - Freeport Health Centre, Ontario Central Chinese Cultural Centre (COCCC) and the Waterloo Regional Home Care Program, we are requesting your participation in a survey of "Retailers Distributing Traditional Chinese Medicines (TCM)". This research study is funded by Health Canada and COCCC. All retailers carrying TCM in the Waterloo Region are invited to participate.

It is known that TCM are useful in many ways for treatment of diseases and health promotion. However, the lack of understanding of the potential adverse interactions between TCM and Western medicines pose health concerns to the users. Although research on TCM is actively sought in Asian countries, very little is known about how people in Canada use them. It is therefore very important that studies be done in the Canadian context to understand TCM usage pattern. A community wide user survey will be conducted in the Waterloo Region to obtain this information. Prior to the user survey, all retailers carrying TCM products will be surveyed to gain a clear picture of what types of TCM are available. After the completion of the Retailer Survey, each participating store will receive a copy of the final report. This report can be a useful piece of market survey information.

After you have received this letter, the principal researcher, Ms. Erin Tjam, will contact you by phone to arrange a meeting time. For your convenience, the survey will be conducted in your store. The survey will include a brief

敬啓者：

滑鐵盧大學，GrandRiver醫院 - Freeport健康中心，安省中部中華文化中心以及家居護理服務四大機構，誠意邀請貴商店參與一項名為「本地華人使用中西藥」之「中藥零售商調查」的學術性研究。這項研究是由加拿大聯邦衛生部及中華文化中心所資助。所有在滑鐵盧區售賣中藥的商店，都被邀請參與。敬請閣下踴躍支持。

中藥無論在治療疾病或是強身健體方面，都有顯著的效能。但是對於中西藥共用而可能產生的副作用，就因資料不足，而用者無法得到全面的保障。在加拿大的中藥使用者中，華裔人仕佔大多數。雖然中藥研究在亞洲國家正積極進行，但在加拿大，無論中藥的使用情況或使用者的特點等資料都非常缺乏。因此加拿大極為需要展開本地性的調查研究。為針對這個問題，一項名為「本地華人使用中西藥」的全面調查將會在一九九六年展開。在此之前，所有中藥零售商會先接受訪問，以便瞭解本區中藥的種類、銷售量和供應情況。調查完成後，主辦當局將會送上一份研究報告，以助閣下了解本地市場的需要和協助生意拓展。

閣下收到此封邀請信後，主研究師詹越女士會以電話聯絡，安排訪問時間。為求盡量方便閣下，訪問可在貴店進行。這次調查將包

inventory of the types of TCM available in your store, and a short interview. Participation in this survey is voluntary and should take about 15 minutes. You may decline to answer any questions you feel inappropriate and you may withdraw from the study at any time. The final report will be completed in September, 1995.

括兩個過程，第一個過程是編製各類中藥貨品的名單，以便了解中藥的種類和銷售量。第二個過程是簡短的問卷調查，訪問時間將不會超過十五分鐘。閣下可以拒絕回答任何認為不適合的問題，也有權終止訪問。研究總結報告書將會在一九九五年九月份完成。

The information obtained from the survey will be kept strictly confidential. Any information obtained from this survey will be analysed for academic purposes only. This study has been reviewed and approved for ethical standards through the Office of Human Research & Animal Care at the University of Waterloo. You may contact this office at (519) 885-1211 ext. 6005 for more information

這項調查所得的資料將完全保密。所有資料將會純粹用於學術性研究。此調查已獲得滑鐵盧大學審核及批準。如果閣下有任何問題，請致電滑鐵盧大學（Office of Human Research&Animal Care），電話：(519)885-1211內線6005查詢。

This is the first time that a region wide survey focusing on the use of TCM is being funded and carried out. Your participation is extremely important in ensuring high quality data being collected.

此項調查是首次聯邦政府資助的區制華人中醫藥研究，閣下的參與能直接影響到研究成果的質素，謹請參與。準確資料將能協助研究成功以及改善華人社區福利。

Thank you in advance for your assistance with this study. If you have any question, please feel free to contact Erin Tjam at (519) 893-2710 ext. 7185 (office), or (519) 725-3674 (home).

在此衷心感謝貴店對本研究的支持。如有問題，請致電詹越, Erin Tjam, 電話：(519) 893-2710 內線 7185（工作），或（519) 725-3674（住宅）。

Yours truly,

Erin Y. Tjam, B.Sc., M.H.Sc.
Community Health Researcher
Speech-Language Pathologist

詹越 博士候選人
研究師
語言病理師

John P. Hirdes, Ph.D.
Assistant Professor
University of Waterloo

何迪斯博士
滑鐵盧大學助理教授

Appendix H

TCM Survey Store Owner Questionnaire (English)

A Survey of Retailers Distributing Traditional Chinese Medicines Questionnaire

For the purpose of this survey, Traditional Chinese Medicines are divided into: A) Chinese Medicinal Materials, and B) Chinese Proprietaries.

A) Chinese Medicinal Materials - they are Chinese herbs, herbal tonic, and animal products
B) Chinese Proprietaries - they are ready -made drugs in the form of pills, powder, drinks, wine, ointment, and capsules

These include all products that are taken orally, injected or put on skin.

Please answer the following questions as completely as possible:

1. Please list your top 10 selling **Chinese Medicinal Materials**. Adjacent to the names, please indicate their volume of sale, and dollar value of sale **in a month**:

Chinese Name	English Name	Volume of Sale	$ Value of Sale
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

2. Please list your top 10 **Chinese Proprietaries**. Adjacent to the names, please indicate their volume of sale, and dollar value of sale **in a month**:

Chinese Name	English Name	Volume of Sale	$ Value of Sale
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

3. In the practice of Traditional Chinese Medicine, Chinese medicinal medicines are generally grouped under Potent and Non-potent. To the best of your knowledge, please list five types of medicines that you sell under each group:

Potent	Non-potent
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

___ Don' t know

4. Is there a traditional Chinese Medical doctor associated with your store?

___ yes ___ no

5. What percentage of your customers who buy TCM come from the following cultural group?

___ % Chinese (People with Chinese Heritage)
___ % Non-Chinese

6. What percentage of your customers ask for your opinion on what TCM to take for a particular health problem? Please check one that applies to you.

___ over 90% ___ 70-90% ___ 50-69% ___ 20-49% ___ under 20% ___ none

7. What percentage of your customers have a perscription from a Chinese Medicine doctor when they buy TCM from your store? Please check one that applies to you.

___ over 90% ___ 70-90% ___ 50-69% ___ 20-49% ___ under 20% ___ none

8. How comfortable are you with providing advice about TCM? Please check one that applies to you.

___ comfortable
___ some what comfortable
___ slightly uncomfortable
___ not comfortable at all

9. What can COCCC do to help promoting your business in the Waterloo Region? Please check as many as applicable.

___ advertising your business & hiring needs in newsletters
___ advertising your business & hiring needs on the Chinese radio station
___ advertising your business & hiring needs on the bulletin board at the COCCC
___ others, please suggest:_____

Appendix I

TCM Survey Store Owner Questionnaire (Chinese)

中藥零售商調查
問卷

為符合本調查的目的，中藥此名詞將會分為：甲）中藥材，和乙）中藥成藥兩項。

甲）中藥材：所有草藥（包括補藥）及動物產品都歸此項
乙）中藥成藥：所有現成的酒、露、丸、粉、膏、囊狀等的中藥品

以上兩項包括所有口服，注射及外用的藥物。

請盡量回答下列所有的問題：

1. 請列出貴店最暢銷的十種中藥材。在中、英藥名旁側，請指出每種藥材在一個月內的平均銷售量及銷售額

	中文藥名	英文藥名	銷售量	銷售額
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

2. 請列出貴店最暢銷的十種中藥成藥。在中、英藥名旁側，請指出每種成藥在一個月內的平均銷售量及銷售額

	中文藥名	英文藥名	銷售量	銷售額
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

3・以中醫學來講，中藥材通常被分爲烈性及非烈性兩大類。以閣下的了解，請列出貴店所售賣的烈性及非烈性藥材各五種

烈性	非烈性
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

____不清楚藥性

4・貴店有沒有中醫駐診

___有　　___沒有

5・在貴店購買中藥的顧客中，有百分之幾是屬於以下的種族？

百分比（%）

_____華裔人仕

_____非華裔人仕

6・在貴店購買中藥的顧客中，有百分之幾會詢問閣下關於中藥的意見？

__超過90% __70-90% __50-69% __20-49% __少過20% __沒有

7・在貴店購買中藥的顧客中，有百分之幾有中醫處方？

__超過90% __70-90% __50-69% __20-49% __少過20% __沒有

8・以下四項中，那一項最能形容閣下對顧客提供有關中藥知識的想法

____覺得非常安心
____覺得安心
____覺得有點不安
____覺得非常不安

9・中華文化中心如何能協助貴商店在滑鐵盧區生意的拓展

____在會員通訊裏爲閣下刊登有關商業及聘請的資料
____在中華之聲的電台節目中裏爲閣下播放有關商業及聘請的資料
____在中華文化中心會址的公告欄中刊登有關商業及聘請的資料
____其他，請建議：_____

Appendix J

TCM Inventory Form

ID # _____

Chinese Proprietaries
Inventory

Chinese Name:_____ English Name: _____
Brand Name: _____ Price / Unit: _____
Listed Ingredients: _____
_____
Medicinal Purposes: _____
Warnings: _____

Dosage: _____

_____

Chinese Name:_____ English Name: _____
Brand Name: _____ Price / Unit: _____
Listed Ingredients: _____
_____
Medicinal Purposes: _____
Warnings: _____

Dosage: _____

_____

Chinese Name:_____ English Name: _____
Brand Name: _____ Price / Unit: _____
Listed Ingredients: _____
_____
Medicinal Purposes: _____
Warnings: _____
Dosage: _____

_____

Appendix K

Letters of Support from Participating Agencies

COCCC 安省中部中華文化中心
CENTRAL ONTARIO CHINESE CULTURAL CENTRE INC.
P.O Box 42019, 550 King Street North, Conestoga Mall, Waterloo, Ont., N2L 6K5

Ms. Erin Tjam
Freeport Hospital
3570 King Street East
Kitchener, Ontario
N2A 2W1

Dear Ms. Tjam,

I have read your proposal to the National Health Research and Development Program to complete a 3 year study of the use of traditional Chinese medication and western medications among Chinese Canadians in the Waterloo Region. I would like to confirm the enthusiastic support of the Central Ontario Chinese Cultural Centre (COCCC) for this project. We feel that it will provide valuable information on an important issue affecting our members, particularly those who are elderly.

The COCCC will support you in this project by identifying members who would be interested in participating as volunteer interviewers under your supervision or as members of focus group meetings. We will also assist you in selecting a random sample of our membership and provide other materials that we may have that are useful in identifying potential subjects for your survey. We will encourage our members to participate in your study and we will assist you in making promotional material available to any target groups you identify. I am also pleased to confirm that we will provide some financial support to your project. If the proposal is successful in obtaining funding from Health Canada, we will cover the expense of translation of your questionnaires, promotional material and reports to our membership for up to $5000.

Please let me know if we can be of any additional assistance in support of this extremely valuable project.

Yours truly,

Shu-Hing Man
President



September 16, 1994

Ms. Erin Tjam
Rehabilitation Department
Freeport Hospital
3570 King Street East
Kitchener, Ontario
N2A 2W1

Dear Ms. Tjam:

I have read your proposal for research on the use of traditional Chinese remedies and western medications among older Chinese Canadians in the Waterloo Region. Freeport Hospital fully supports you in your efforts to receive funding as a Community Researcher for this project. Your proposal makes a compelling case for education of seniors and of all members of the health and social service system to ensure the appropriate use of therapeutic approaches that are both effective and culturally sensitive. Freeport Hospital has much to learn from the results that may be obtained from your work.

I wish you well in this endeavour and I would be pleased to assist in any manner that is appropriate.

Sincerely,

Pat Henderson

Patricia A. Henderson, R.N., C.H.E.
Executive Director
:bs

University of Waterloo

Waterloo, Ontario, Canada
N2L 3G1

Faculty of Applied Health Sciences
Department of Health Studies
and Gerontology
519/885-1211 or 519/888-4567
Fax 519/746-2510

John P. Hirdes, Ph.D.
Assistant Professor
Phone: 519-888-4567 Ext. 2007
Fax: 519-746-2510
Email: hirdes@healthy.uwaterloo.ca

September 16, 1994

Ms. Erin Tjam
Rehabilitation Department
Freeport Hospital
3570 King Street East
Kitchener, Ontario
N2A 2W1

Dear Ms. Tjam,

I am writing in support of the proposal you are submitting to the Seniors' Independence/Canada's Drug Strategy Community Researcher competition. As outlined in the proposal, I will be pleased to work closely with you in all aspects of this important project. Your project would make a unique contribution to knowledge, and it should help to improve the quality of service provision to seniors from cultural minorities. The methodology you have outlined should provide useful information that may be applied to a broad range of questions.

The collaboration of Dr. Iris Chi, Hong Kong University, and Dr. Chyong-Fang Ko, Academia Sinica, is particularly exciting, because it gives an opportunity to do work that ranges in scope from regional issues relevant in the Waterloo area to international comparisons of the experience of the elderly in at least three countries.

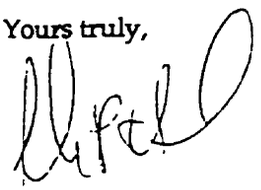
I would like to confirm a number of specific points of agreement with respect to the support I can provide you. First, your enrolment in the doctoral program in the Department of Health Studies and Gerontology at the University of Waterloo will provide you with the opportunity to strengthen your methodological skills needed for this type of community-based research and it will also allow you to broaden your substantive knowledge with respect to health promotion and aging.

As Director of Research at Freeport Hospital, I can also confirm that you will have access to office space, meeting space, interview rooms, audiovisual equipment, computing equipment with

appropriate software (e.g. SAS for Windows, WordPerfect, Excel, Harvard Graphics), telephone, facsimile and office supplies needed for the project. In addition, you will be provided with some secretarial support from our department secretary.

Please let me know if you require any additional information. Best wishes for success in your submission.

Yours truly,



John P. Hirdes

The
Regional
Municipality
of Waterloo

SOCIAL SERVICES DEPARTMENT

Home Care Program

Branch Office: 150 Main St., Cambridge, ON N1R 8H6
Telephone: (519) 621-0040 Fax: (519) 623-5068

September 15, 1994

Dr. John P. Hirdes
Department of Health Studies and Gerontology
University of Waterloo
Waterloo
Ontario, Canada N2L3G1

Dear Dr. Hirdes:

I have reviewed the proposal prepared by Ms. Erin Tjam and you to complete a 3 year study of the use of traditional Chinese medication and western medications among Chinese Canadians in Waterloo Region. I am writing to confirm that the Waterloo Region Home Care Program agrees in principal to support this project subject to final approval by the Regional Health and Social Services Committee and the Ethics Review Committee of the University of Waterloo. The needs of adults with disabilities and frail seniors from various cultural groups remain a priority in our organization, and, although the population targeted for study in Waterloo Region may not be large, the information gained from this research project will enhance our understanding of the needs of other cultural groups within the Region and will assist us in improving the quality of the services we provide.

We understand that our role in supporting Ms. Tjam as the Community Researcher for this project will be to provide advice from the perspective of a community-based provider and to assist in planning activities as required. This will include the sharing of any pertinent protocols and guidelines that have been developed to assist us to better serve Seniors from varied cultural backgrounds. We are prepared to participate in focus groups to discuss the experience of community service in working with Chinese Canadian clients. In addition and subject to our adherence to our guidelines on client confidentiality, the Home Care Program will provide relevant client data, and is willing to assist you in identifying appropriate methods for communicating the results of this research to other agencies through newsletters, conference proceedings and other possible approaches.

I believe this project represents the first in a series of research endeavours that will be of mutual interest. The Home Care Program looks forward to an on-going collaborative relationship with you and with Ms. Tjam. Please let me know if I can provide any additional information in support of Ms. Tjam's proposal.

Sincerely,

Kim Voelker

Kim Voelker
Branch Manager

社會工作及社會行政學系

DEPARTMENT OF SOCIAL WORK
AND SOCIAL ADMINISTRATION

香 港 大 學
香港薄扶林道

The University of Hong Kong,
Pokfulam Road, Hong Kong.

Our Ref:

Your Ref:

Tel. 8592288 / 8592075
Telex: 71919 CEREB HX
Fax: (852) 8587604

September 13, 1994

John P. Hirdes, Ph.D.
Assistant Professor
Department of Health Studies & Gerontology
University of Waterloo
Waterloo, Ontario
N2L 3G1
Canada

Dear Professor Hirdes,

Thank you for the opportunity to review on your proposal to the Seniors' Independence Research Program for Programs of Applied Research. I am writing to give my consensus to work with you and Ms. Erin Tjam to define the questions of interest, conduct parallel analyses with data from Hong Kong and prepare papers for publication and presentation at scientific conferences.

In Hong Kong, drug use among the elderly is an important health issue. Elderly patients know very little about their rights as patient. Doctors are often difficult to approach. Elderly are in general very reluctant to go to the doctor when they feel sick, they prefer to try 'old' medicines or medicines from friends or family members. Different tablets with the same dose frequency are sometimes mixed in the same container. Elderly patients find it hard to remember what has been taken. As a result of this, missing dosing on one and double dosing on the others are not uncommon. In addition, most elderly do not have their own personally record for their medicine in their own hands. Therefore, drug interaction is common when the elderly changes doctor or purchases over-the-counter medicines from drug stores without pharmacists' supervision.

Your study is very significant and will undoubtedly draw a lot of interest amongst physicians, pharmacists, and social workers in Hong Kong. Thank you for providing the opportunity for me to participate.

Sincerely yours,

Iris Chi, DSW

中華之聲廣播電台
CKWR FM 98.7 CHINESE HOUR
56 REGINA STREET NORTH
WATERLOO, ONTARIO N2J 3A3

Ms. Erin Tjam
Freeport Hospital
3570 King Street East
Kitchener, Ontario
N2A 2W1

Dear Ms. Tjam,

As the coordinator of the CKWR FM 98.7, the Chinese Hour, I am very pleased to learn about your proposal to the National Health Reasearch and Development Program on the study of the use of traditional Chinese medications and western medications among Chinese Canadian in the Waterloo Region. Our programmers feel that the information you will be generated from the study would be of great interest to our community, especialy to our elderlies and their families. We see the importance of communicating this information to our community as it will help in promoting health awareness and status of our elderlies.

CKWR FM 98.7 is the first community multicultural radio station in Canada. The Chinese program reaches a large number of Chinese in the Waterloo Region. We would be glad to assist you to communicate any pertinent information form your study through our program. If you can identify any other ways that we could be of further assistance to you, please do not hesitate to contact us.

We wish you luck in your funding request.

Yours truly

Vincent Lai
Coordinator

COCCC 安省中部中華文化中心
CENTRAL ONTARIO CHINESE CULTURAL CENTRE INC.
P.O Box 42019, 550 King Street North, Conestoga Mall, Waterloo, Ont., N2L 6K5

Ms. Erin Tjam
Freeport Hospital
3570 King Street East
Kitchener, Ontario
N2A 2W1

Dear Ms. Tjam,

We would like to confirm our agreement to participate as a seniors advisory panel for your proposal to the National Health Research and Development Program to complete a 3 year study of the use of traditional Chinese medication and western medications among Chinese Canadians in the Waterloo Region. As part of this project, we will participate in periodic meetings scheduled by you to discuss all aspects of the project and to provide you with advice from the perspective of Chinese Canadian seniors as you plan and execute the various phases of this work. We feel that your study will provide valuable health information to Chinese Canadian seniors and it will also help to improve the quality of care provided by community and institutional organizations to our community.

We wish you success in your request for funding from Health Canada.

Yours truly,

Wah Lee

Mei-Hui Wu

Elizabeth Wang

Preston Yeung

Tai-Chung Ho

David Wong