

## The Prevalence of Chronic Diseases among Nursing Home Residents: Using the Minimum Data Set (MDS) of Missouri in the US

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### Abstract

Due to great concern about quality of care in nursing home, legislative in the US mandated development of LTC MDS. MDS, a standardized assessment database for nursing home residents, provides comprehensive, holistic assessment data for nurses and make it possible to identify nursing needs of residents. The purpose of this study is to assess the health status of nursing home residents in Missouri, America, and to stimulate international comparative research assessing the health status of the elderly. This study presented the age-specific prevalence of diseases, sex differences, and the relative prevalence of chronic diseases among nursing home residents using the Minimum Data Set in Missouri. In addition, the possibility of racial and regional differences in chronic diseases and its relationship to demographic factors were analyzed. The prevalence of diseases was, in general, higher in female elderly then males and increased with age in both sexes. The average number of diseases in the elderly, among 31 chronic diseases, was 3.43 in women and 3.25 in men. The most prevalent 5 diseases were hypertension (29.1%), congestive heart failure (26.1%), dementia (23.6%), arthritis (20.6%), and diabetes mellitus (17.7%). Sixty-eight percent of nursing home residents had at least one of the heart/circulation related diseases and 58. 4% had neurology related diseases. In conclusion, the usefulness and implication of LTC MDS to nursing can't be overemphasized. Korean nurses should prepare themselves for using it for nursing research and to answer nursing questions.

Key words : *Nursing home, Elderly, Minimum data set (MDS)*

### Introduction

Due to modern medical technology, elderly persons today may enjoy a much longer life expectancy than their parents' generation. In this century we are more concerned with quality of life and increased healthy life span rather than the mere length of life (U.S. Department of

Health and Human Services, 1990). Unfortunately, for many older persons, their later years are not the best times of their lives. Chronic illness, loneliness, poverty, and immobility often impair the quality of life.

The number of nursing home residents in the United States (U.S.) is expected to more than double within the next 30 years, exceeding 5

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million by the 2040 (Ouslander, Osterweil, & Morley, 1991). The increased demand for nursing homes has enhanced awareness of the importance of improving the quality of care in these facilities. For many years, there have been a number of attempts to improve the quality of care in nursing home in the US.

The Omnibus Budget Reconciliation Act of 1987 (OBRA '87) recognizes the importance of assessment of nursing home residents and requires a comprehensive, standardized, and reproducible assessment of each resident's functional capacities. The Omnibus Reconciliation Act mandated the electronically transmitted the Resident Assessment Instrument (RAI) to State/Federal repository for all nursing homes receiving Medicaid and Medicare. RAI is 4 page assessment tool with 16 different assessment screens (Phillips, Chu, Morris, & Hawes, 1993; Rantz, 1995). The Minimum Data Set (MDS) is a database of standardized assessment of nursing home residents abstracted from the RAI. The MDS was designed to provide for comprehensive, holistic assessment, and describe nursing needs. The requirement of quarterly reassessment of the MDS provides a rich source of data for nurse to identify the improvement or deterioration of the resident's condition with implications for changes in care.

The large LTC MDS creates an opportunity to compare results internationally as well. Health status of the elders varies with race, country, and cultural background; however, there has been little cross-cultural research conducted. In general, Asian elders are considered to be relatively healthier than older persons in the US. Data from the National Center for Health Statistics showed that the incidence of all major diseases was lower among Asian Pacific Island elderly than whites (Liu & Yu, 1985; Tanjasiri, Wallace, & Shibata, 1995). The age adjusted mortality rate 3.2 deaths per 1000 population of Asian or Pacific Islanders and 5.3 in White (Liu & Yu, 1985). However, little research has been published on health related statistics of Korean elderly and there is more little comparative research with the health status of elderly in other countries. Therefore, it will be meaningful to see the level of health status of elderly in the US, so

Korean nurses can get a sense how to manage the Korean elderly population in the future when Korea has a nursing home MDS. Also if we can see the difference in health problems in two country, Korean nurses can assess where and why the differences in health status appear.

### Research questions

The following research questions were analyzed.

1. How does the number of diseases found in Missouri nursing home residents differ according to age and sex?
2. Is there any significant difference in the number of diseases when comparing male and female elderly in Missouri nursing homes?
3. What types of diseases are the most prevalent in nursing home residents in Missouri?
4. Are there any significant differences in the types of diseases according to age and sex in nursing home residents in Missouri?

## Literature Review

### 1. Health status in elderly

Health can be defined in various ways. For example, the definition of health used by the World Health Organization is "a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity" (Burke & Walsh, 1997, p.7). Another definition of health is "the ability to live and function effectively in society and to exercise self reliance and autonomy to the maximum extent feasible, but not necessarily as total freedom from disease" (Filmer & Williams, 1989, p.34).

Both research on the aging process and rapidly developing health care technology have contributed to increased longevity. Today, many older people are living healthier lives. However, by the time a person reaches age 85, there is a one in three chance that they will have dementia, immobility, incontinence, or other age-related disabilities (Burke & Walsh, 1997). Elderly people consume a higher proportion of acute and long-term care services. For example, the elderly constitute 13% of the total population of the U.S.,

but they occupy more than 50% of hospital beds and use more than 70% of ambulatory care, home care, and institutional health care services (Luggen, 1996). Total federal expenditures for the elderly over 80 are expected to increase by 67% between the years of 1980 and 2000 (Burke & Walsh, 1997). Thirty percent of the Medicare budget was spent on 6% of the Medicare population in the last year of life. Federal spending on health care costs for the elderly population has doubled since 1960 (Luggen, 1996).

Although the occurrence of various diseases may not be synonymous with aging, there is evidence that the incidence of health problems is correlated with and increases with age. In addition, older persons commonly experience more than one disease at a time, referred to as comorbidity. Comorbidity affects the overall health status and functional ability of elderly people and increases the difficulty of caring for the elderly. However, there exists a paucity of reports on comorbidity in the elderly (Burke & Walsh, 1997).

According to U.S. mortality statistics in 1979, the prevalence of comorbidity at the time of death was 73% of all deaths. Two causes accounted for 33% of deaths, three causes for 25%, and more than four causes 16%. The proportion of comorbidity has increased from 35% in 1917 to 50% in 1955, and to 73% in 1979 (Burke & Walsh, 1997). This kind of increase can be partially explained by, 1) an increase in average age at time of death, 2) fewer deaths from acute and infectious diseases, and 3) more accurate medical diagnostic techniques (Guralnik, LaCroix, Everett, & Kovar, 1989).

In 1982, the National Health Interview Survey (NHIS) presented information about the nine most prevalent diseases among people 65 years and older: arthritis (49.58%), hypertension (39.04%), hearing impairments (29.97%), heart problems (25.68%), sinusitis (15.17%), orthopedic impairment (10.11%), varicose veins (8.89%), diabetes (8.3%), visual impairment (7.77%), and arteriosclerosis (7.36%) (Luggen, 1996).

The increase in the elderly population has brought special implications for nursing and health care. First, compared to other age groups, elderly people are the heaviest users of health care services and a growing number of the

elderly will consume health care services even more disproportionately in the future. Second, the female elderly use health care services more extensively than male elderly and their life expectancy is 7.5 years longer. Elderly women are the fastest growing age group. Moreover, women in general use health services more than men and seek professional health care earlier than men with even minor conditions (Atkins, 1990).

Men and women have different perspectives on aging. The sex difference may be due in significant part to the influence of sex hormones on the cholesterol lipoprotein profile and other cardiovascular factors, so that men have a higher incidence of arteriosclerosis and earlier death. The greatest impact on the sex difference in mortality rates would be gained by concentration on life style changes designed to diminish arteriosclerosis in men: low cholesterol diet, no smoking, optimal body weight, and active exercise. The death rate in men is higher at all ages. Coronary heart disease accounts for 40% of the mortality difference between men and women (Speroff, 1996).

Fries (1990) describes three eras in health and disease. The first era, during which mainly acute infectious diseases dominated, existed until the early 1900's. The second era was characterized by cardiovascular disease and cancer, and is now beginning to fade into the third era, characterized by frailty, such as fading eyesight, hearing, and impaired memory and cognitive levels. Therefore, the issue at present is the years free of disability rather than on mortality. The primary purpose of health promotion is to improve the quality of life.

Quality of life for the elderly means functional independence, managing stress, continuously developing emotional and cognitive ability, and positive relationships with others (Pulliam, Plowfield, & Fuess, 1996). Health care in the elderly becomes more difficult with aging. Additional preventive health care should be adopted to compensate for increased risk factors associated with organ dysfunction and decline. The high prevalence of chronic disease has brought another challenge to health maintenance in older people.

Aging can be modified by a change in life

style which in turn can postpone the onset of diseases. Changing the life style to be alert for chronic diseases is one of the greatest challenges facing the elderly. An important task for nurses is to provide health care for the elderly that assists them with changing their life style to reduce the risk factors which are associated with chronic diseases.

## 2. Female elderly

Women make up 71.2% of the elderly poor in the US (Muller, 1990). Many women are poor because they discontinued their careers without retirement plans to rear children, or become care givers to their spouse or parents. Poverty inhibits the amount and quality of health care received by elderly women (Pulliam et al., 1996). Because of poverty, they may not receive treatments aimed at maintaining their functional status such as joint replacement surgery, cataract removal, or treatment for osteoporosis (Muller, 1990). Approximately 70% of elderly women live alone without a spouse or live with unrelated persons, and about 25% of elderly women older than 70 have no living children (Horton, 1992). Therefore, loneliness and the lack of social support put elderly women mentally and physically at risk. Even though widowhood is not a causal factor for mental illness in older women, risk factors for psychiatric impairment are contingent on a number of deprivations associated with widowhood, poor physical health, and low socioeconomic status.

Nearly 80% of elderly women have at least one chronic disease, and at the age of 80 years, 90% have at least one or more chronic diseases (Stanley & Beare, 1995). Like men, the most frequent causes of death in women are heart disease, cancer, and stroke. However, women have more difficulty in their daily life with non life-threatening diseases such as urinary incontinence, loss of sight, hearing, falls, drug interactions, and medication side effects (Pulliam et al., 1996).

Females comprise the majority of the American population, and this majority continues to grow. American women can be expected to live 78.3 years, compared to 71.4 years for American men.

In 2050, the life expectancy for women will probably be 81 years, and for men, 71.8 years. There will be 33.4 million women 65 and older, compared with 22.1 million men (Chalotte, 1987). This feminization of the elderly population has four implications for nursing: "1) The female majority is concentrated in the upper age ranges, 2) most elderly women do not have a spouse to care for them, 3) most elderly women live alone, and 4) most elderly women have poorer health than men" (Stanley & Beare, 1995, p. 4).

## Methods

**Instrument:** To improve and control the quality of care in long term care settings (LTC), the Omnibus Reconciliation Act of 1987 mandated the development of a national LTC Minimum Data Set (MDS) for all Medicare and Medicaid reimbursement in the US. The MDS is a standardized dataset to collect systematic assessment information of each resident in nursing homes. The MDS was designed to provide for a comprehensive, holistic assessment, describe nursing needs, and assess cognitive and functional abilities. The requirement for quarterly reassessment of MDS took effect in 1990 and all nursing home receiving Medicare and Medicaid had to transmit the data to State/Federal repositories. MDS has 18 different assessment screens. The 16 assessments contain such as cognitive patterns, communication & hearing patterns, physical functioning & structural problems, psychosocial well-being, medication use, disease diagnoses, and etc.. (Snowden, et al, 1999). However, this study only analyzed disease diagnoses section that measure chronic diseases of nursing home residents.

**Data Collection:** Data for this study were extracted from the MDS for nursing home residents in Missouri in the US. The data were collected in every nursing home in the Missouri, US, through whole fiscal year in 1995–1996. The number of nursing home residents in the Missouri, US in the fiscal year of 1995 to 1996 were total 6347. The MDS contains 31 items which measure chronic diseases such as hypertension, diabetes mellitus, cataracts, and

dementia. To identify the prevalence of chronic diseases among nursing home residents older than 65 years, all 31 items were chosen for this analysis. All items are dummy variables; yes/no questions. Therefore, the higher number means higher number of diseases in nursing home residents.

Analysis: Descriptive statistics such as frequencies, means, and percentages were used to analyze data about the number of diseases. To analyze differences in the prevalence of chronic diseases according to sex and age, Chi square statistics were calculated. T-test was also used to determine differences in the number of chronic diseases between men and women.

## Results

Demographic characteristics of 6347 subjects are represented in Table 1. The largest age group was 85-94 (41.0 %), followed by the age groups 75-84 (38.4%), 65-74 (15.3%), and over 95 (5.4%). The number of female residents (N=1633) were nearly almost three times the number of male residents (N=4707) in this study.

**Table 1.** Demographic distribution of nursing home residents in the U.S. (n=6347)

	Male	Female	Both
Age			
65-74	363( 5.4%)	625( 9.9%)	968(15.3%)
75-84	685(10.8%)	1751(27.6%)	2436(38.4%)
85-94	558( 8.8%)	2039(32.2%)	2597(41.0%)
95 +	47( 0.7%)	292( 4.6%)	349( 5.4%)
Sex	1633(25.8%)	4707(74.2%)	6347(100%)

**Table 2.** Number of diseases according to age and sex in the U.S.

	Male	Female	Both
age			
65-74	3.32	3.15	3.18
75-84	3.24	3.52	3.44
85-94	3.33	3.45	3.42
95 +	2.89	3.48	4.40
total	3.25	3.43	3.39

**Table 3.** The difference in number of diseases according to sex in the U.S. (n=6347)

	Mean	S.D.	Max.	t	p
Male	3.256	1.764	11	-3.51	0.000
Female	3.438	1.881	14		

On average, elders in this study had 3.39 diseases from among the 31 chronic diseases; women had an average of 3.43 with a maximum number of 14, and men had an average of 3.25 with a maximum number of 11. The number of diseases was significantly higher in women than men ( $t=-3.51$ ,  $p<.0001$ ). Specifically, men over age 95 had the lowest number of diseases, 2.89, of all age groups in both sexes.

The 10 most prevalent diseases in this study of Missouri nursing homes were hypertension (29.1%), congestive heart failure (26.1%), dementia (23.6%), arthritis (20.6%), diabetes mellitus (17.7 %), arteriosclerotic disease (17.2 %), Alzheimer's disease (16.9%), cerebrovascular accident (16.3%), anemia (15.3%) and cardiovascular disease (14.9 %). Some variation was found in the prevalence of chronic diseases according to age groups. As demonstrated in Table 4, the prevalence of hypertension occurs in all age groups. However, diabetes mellitus was most prevalent in the 65 to 84 age group, and depression was only seen in the 65 to 74 age group.

To better understand the prevalence of certain types of chronic disease, several kinds of diseases were grouped together (Table 5). Arteriosclerotic heart disease, cardiac dysrhythmias, congestive heart failure, hypertension, hypotension, peripheral vascular diseases, and other vascular diseases were grouped into heart/circulation diseases. Similarly, Alzheimer's, dementia (other than Alzheimer's), aphasia, cerebrovascular accident, multiple sclerosis, and Parkinson's disease were grouped as neurological diseases. Table 5 shows the prevalence of chronic diseases. For example, 68.1% of nursing home residents had at least one of the heart/circulation related diseases, 58.4% had neurology related diseases, 40.5% had other' diseases, 25.7% endocrine diseases, 25.6% orthopedic diseases, 22.1% psychiatric diseases, 15.9% pulmonary diseases, and 8.7% ophthalmologic diseases. The prevalence of chronic diseases generally increases with age in both sexes. The statistically significant differences in most cases also can be explained due to a large sample size, so careful interpretation of the data is required.

**Table 4.** The prevalence of chronic diseases according to age group (U.S.)

65-74	75-84
1. Hypertension 303 (31.5%)	Hypertension 716 (29.4%)
2. Diabetes Mellitus 231 (24%)	Congestive Heart Failure 590 (24.5%)
3. Cerebrovascular Accident 199 (20.7%)	Dementia 551 (22.6) %
4. Congestive Heart Failure 182 (18.9%)	Diabetes Mellitus 494 (20.3%)
5. Dementia 166 (17.3%)	Alzheimer's 491 (20.2%)
6. Depression 155 (16.1%)	Arthritis 453 (18.6%)
7. Emphysema/Asthma/COPD 145 (15.1%)	Cerebrovascular Accident 426 (17.5%)
85-94	95+
1. Congestive Heart Failure 764 (29.5%)	Congestive Heart Failure 107 (31.5%)
2. Hypertension 734 (28.4%)	Arteriosclerotic 97 (28.5%)
3. Dementia 681 (26.3%)	Dementia 96 (28.2%)
4. Arthritis 624 (24.1%)	Arthritis 94 (27.6%)
5. Arteriosclerotic 500 (19.1%)	Hypertension 90 (26.5%)
6. Anemia 461 (17.8%)	Anemia 70 (20.6%)
7. Alzheimer's 424 (16.4%)	Other Cardiovascular disease 49 (14.4%)

**Table 5.** The Prevalence of chronic diseases among nursing home residents according to age and sex (U.S.)

Age	Male No. (%)	Female No. (%)	Both No. (%)
Prevalence of Heart/Circulation diseases			
65-74	208(61.2)	367(59.1)	575(59.8)
75-8	43(64.9)	1184(67.7)	1630(67.0)
85-9	369(66.4)	1479(72.9)	1850(71.5)
95+	31(66.0)		253(74.4)
Total	1051(64.5)	221(75.7)	4308(68.1)
Male $\chi^2=2.560$ P>.05; Both $\chi^2=51.341$ P<.001;	Female $\chi^2=50.063$ P<.001; Sex $\chi^2=12.100$ P<.001		
Prevalence of Neurological Diseases			
65-74	221(65.0)	327(52.7)	548(57.0)
75-84	441(64.6)	1062(60.8)	1505(61.8)
85-94	331(59.5)	1127(55.5)	1460(56.4)
95+	23(48.9)	156(53.4)	180(52.9)
Total	1016(62.5)	2672(57.0)	3693(58.4)
Male $\chi^2=7.930$ P<.05; Both $\chi^2=21.017$ P<.001;	Female $\chi^2=18.172$ P<.001; Sex $\chi^2=16.166$ P<.001		
Prevalence of Other Diseases			
65-7	132(38.8)	287(46.2)	419(43.6)
75-8	283(41.4)	690(39.5)	973(40.0)
85-9	217(39.0)	814(40.1)	1033(39.9)
95+	24(51.4)	111(38.0)	135(39.7)
Total	656(40.3)	1902(40.5)	2560(40.5)
Male $\chi^2=3.307$ P>.05; Both $\chi^2=4.587$ P>.05;	Female $\chi^2=10.060$ P<.05; Sex $\chi^2=.020$ P>.05		
Prevalence of Endocrine Diseases			
65-74	96(28.2)	184(29.6)	280(29.1)
75-84	151(22.1)	534(30.5)	686(28.2)
85-94	116(20.9)	467(23.0)	583(22.5)
95+	11(23.4)	63( 1.3)	74(21.8)
Total	374(23.0)	1248(26.6)	1623(25.7)
Male $\chi^2=7.005$ P>.05; Both $\chi^2=30.314$ P<.001;	Female $\chi^2=34.092$ P<.001; Sex $\chi^2=8.213$ P<.005		

Table 5. Continue

Age	Male No. (%)	Female No. (%)	Both No. (%)
Prevalence of Orthopedic Diseases			
65-7	42(12.4)	121(19.5)	163(17.0)
75-8	86(12.6)	476(27.2)	563(23.1)
85-9	133(23.9)	640(31.5)	774(29.9)
95+	6(12.8)	110(37.7)	116(34.1)
Total	267(16.4)	1347(28.7)	1616(25.6)
Male $\chi^2=34.642$ P<.001; Both $\chi^2=83.517$ P<.001;	Female $\chi^2=47.013$ P<.001; Sex $\chi^2=95.939$ P<.001		
Prevalence of Psychiatric Diseases			
65-7	58(17.1)	183(29.5)	241(25.1)
75-8	125(18.3)	420(24.0)	545(22.4)
85-9	100(18.0)	461(22.7)	562(21.7)
95+	3( 6.4)	46(15.8)	49(14.4)
Total	286(17.6)	1110(23.7)	1397(22.1)
Male $\chi^2=4.437$ P>.05; Both $\chi^2=16.980$ P<.001;	Female $\chi^2=22.851$ P<.001; Sex $\chi^2=25.869$ P<.001		
Prevalence of Pulmonary Diseases			
65-74	83(24.4)	108(17.4)	191(19.9)
75-84	154(22.5)	249(14.2)	403(16.6)
85-94	116(20.9)	256(12.6)	374(14.4)
95+	7(14.9)	31(10.6)	38(11.2)
Total	360(22.1)	644(13.7)	1006(15.9)
Male $\chi^2=3.04$ P>.05; Both $\chi^2=21.901$ P<.001;	Female $\chi^2=11.956$ P<.01; Sex $\chi^2=63.914$ P<.001		
Prevalence of Ophthalmologic Diseases			
65-74	21( 6.2)	28( 4.5)	49( 5.1)
75-84	31( 4.5)	141( 8.1)	172( 7.1)
85-94	70(12.6)	215(10.6)	285(11.0)
95+	6(12.8)	37(12.7)	43(12.6)
Total	128( 7.9)	421( 9.0)	549( 8.7)
Male $\chi^2=30.427$ P<.001; Both $\chi^2=47.989$ P<.001;	Female $\chi^2=28.303$ P<.001; Sex $\chi^2=1.847$ P>.05		

## Discussion

Assessment of health of any population is essential and integral to delivering high quality health care. To use limited resources more effectively, and improve health status, the study of the prevalence of diseases of elderly population will be used for current or future use of services, information, and knowledge processing.

The total number of nursing home residents analyzed in this study were 6347 and the number of female residents were almost three times higher than that of male. On average, the nursing home residents in this study had 3.39 chronic diseases and significantly higher number of

chronic diseases in female residents. However, interesting enough the oldest group, which is over age 95, had the lowest number of disease, 2.89. This may require further investigation in the future. However, several factors should be considered in understanding why the prevalence of chronic diseases is higher in the Missouri study subjects than the results of the National Health Interview Survey. First, these data are drawn from nursing home residents. They have a higher incidence of chronic disease than in the elder in the community setting. Second, the largest age group in this sample was 85-94, older than the average life expectancy in America, so there is a higher chance of chronic disease in the

sample. Third, the elderly with low socio-economic and lower educational backgrounds have a tendency toward a higher incidence of diseases. However, this minimum data set did not contain information about the socio-economic status, educational level of residents, and etc. Further study and careful understanding of results is needed, and socioeconomic and educational backgrounds of subjects should be considered. Fourth, the sex difference in this study could be explained by the age/sex composition of the study population. In the general population, the ratio of men to women was reported as 7:10 at 65 years, and 5:10 at 85 years (Eliopoulos, 1987), but in this study the number of elderly women is almost three times that of elderly men. Because female elderly live longer than male elderly, their longer life span may be a risk factor for the higher prevalence of chronic disease. On the other hand, if women with chronic diseases survive longer than men, that might contribute to a higher prevalence of chronic disease, even though the prevalence of chronic disease is equal between sexes.

The five most prevalent diseases of the Missouri nursing home residents were hypertension, cognitive heart failure, dementia, arthritis, and diabetes mellitus. In Korea, the most prevalent diseases among elderly were arthritis (57.8%), chronic Back pain (32.6%), hypertension (18.8%), chronic gastro-intestinal problems (18.7%), and chronic respiratory diseases (12.0%). Lee, et al's study (Choi, 1999).

In Korea there is growing concern over health problems and care needs of the aging population. Five percent of Korean population were over 65 years in 1990. However, it was expected that about 22 years would take from 7 to 14% for the population aged 65 and over, meanwhile comparable changes occurred over a period of 80 to 115 years in European countries (Kinsella & Taeuber, 1993). The average life span was 73.5 years in 1995 and it will be expected to 78.1 years in 2020. The leading causes of death of Korean were analyzed by the office of Statistics in 1994. According to the data, cancer was the 21.3%, cerebrovascular disease 15.9%, accident 11.5%, heart failure 8.3%, and chronic liver disease 5.0% (National Statistical Office, 1995).

In 1992, the Korean Institute of Health and Social Affairs conducted a national health survey that itemized health problems of the elderly. The subjects were asked to describe their health status "Bad", "Average" or "Good". Approximately half of Korean elderly responded their health status as fairly bad. To assess the use of health services, subjects were asked utilization of health care services, however, half of elderly population had no chance to visit physician during fiscal year (Institute of Health and Social Affairs, 1993).

Comparing health status between American and Korean elderly is not appropriate at this point because Korean doesn't have nursing home MDS yet. But the differences in disease prevalence might be detected because of the reasons as follows: First, the difference in life styles of the two countries might cause significant differences in chronic disease prevalence. Koreans consume more vegetables than meats and have a tendency to avoid life-styles that are not health-promoting. Second, Koreans traditionally complain of physical symptoms more freely than of psychological symptoms because psychological or emotional problems are more stigmatizing and considered more threatening illnesses than physical illnesses. Therefore, Koreans have a tendency to complain of more physical symptoms than to express their psychological and emotional problems. Therefore, when the future research assess health status in both countries, it is strongly recommended that both physical and psychological health care problems should be assessed. Third, in the Korean sample, there is a possibility that the prevalence of chronic disease was underestimated. Poor knowledge and inaccuracy of perception of health status in Korean nursing home residents themselves can be a factor in underestimating their health status. Most of Korean nursing homes elderly have received less formal education or no formal education and live economically deprived lives, possibly resulting in an inadequate understanding of their health status. Fourth, and most importantly, Korean nursing home residents do not necessarily have to be physically or psychologically ill to be institutionalized in a nursing home. The first criteria for admittance to a nursing home in Korea is indigence or having



no family to care for them. Therefore, even though the populations examined in the research assess consist of nursing home residents, there are some inherent differences in population demographics between the American sample and the Korean sample.

Future studies are required using matching methods of gathering data, similar measurement methods, and comparable population demographics. The findings of the research using nursing home MDS should be used in planning health promotion and illness prevention programs to be addressed by nurses in nursing home settings. Health care for the elderly requires a holistic approach that addresses social and economic factors, individual behavior, and medical issues. The nurse's role to promote the health status of elderly is extremely important. Nurses must use their efforts and abilities to provide quality nursing care for the elderly who have chronic diseases.

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