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Health Status of Urban and Rural Elders in Korea

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The main purpose of this study was to describe the differences in health status between urban and rural elders in Korea. The sample consisted of one thousand one hundred non-institutionalized individuals, aged 65 or over, living in three metropolitan cities and two rural provinces. The modified Cornell Medical Index, ADL, IADL, and existing medical diagnosis were used to measure the health status of the elders. Rural elders reported significantly more health problems than urban elders. Differences in ADL and IADL scores were not statistically significant. There was a difference in the types of health problems between the urban and rural elders. While more rural elders reported that they were diagnosed as having neuralgia and arthritis, more urban elders reported that they had diabetes. The results of this study demonstrated that rural elders had significantly more health problems than urban elders even after all the other variables were controlled. However, in Korea, most health care resources available to elders are concentrated in large urban cities. This study suggests that it is important to invest more health care resources in rural areas to meet the needs of all elders in Korea.

Key Words: Health status, elderly, urban and rural elders

The proportion of elders is increasing steadily in Korea. According to the latest government statistics, 6 percent of the total population is older than 65. However, the proportion of elders residing in rural and urban areas is uneven. The same data reported that 10 percent of the rural population is older than 65, meaning that there was a higher proportion living in rural areas than in urban areas. The proportion of elders in Korea is half that of other developed countries, but it will increase as the mortality rate decreases and life expectancy improves in Korea. As more elders live longer, they are more likely to have a greater number of health problems and demand more health care services.

Meanwhile, industrialization and urbanization have caused changes in the lifestyles of the younger generation which has affected the living arrangements of older people in Korea. The traditional family structure, which consists of elderly parents and the eldest son's family, is fading, and more and more elders are living independently from their children. This trend of increasing elderly-only households is more prominent in rural areas where a large number of the younger generation have migrated to urban areas to find better paying jobs. Thus, many rural elders have to take care of agricultural work, living conditions are poorer in rural areas, and most of the health care resources for the elders are concentrated in urban areas.

There are many studies on the health status of elders. Some studies have used the Cornell Medical Index to measure the health status of elders in Korea (Park, 1983; Lee and Huh, 1985; Kim, 1989). Several studies give clear validity to subjective reports from elders as a good measure of their health status

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(Lee and Huh, 1985; Choi *et al.* 1990; Davis *et al.* 1991; Johnson and Wolinsky, 1994). Other important indicators to measure the health status of elders are ADL and IADL (Elson *et al.* 1991; Nyman *et al.* 1991; Fitzgerald *et al.* 1993; Choi, 1994). There are also several studies which compare the utilization of hospitals and home health care services between rural and urban areas (Taietz and Milton, 1979; Nelson, 1980; Rodell and Jameson, 1981; Coward and Cutler, 1989; Cheh *et al.* 1990).

However, there are very few studies that compare the health status of elders in urban and rural areas. One study done by Lee and Huh (1985) studied ADL levels between urban and rural elders in Korea, however, although a comparison of ADL levels between elderly men and women and different age groups was made, a comparison of urban and rural groups was not made. In the USA, Nyman and coworkers compared the health status of urban and rural elders in their study of home health care (Nyman *et al.* 1991).

It is necessary to understand the health status of urban and rural elders separately since many factors affecting the health status of elders are different in urban and rural areas in Korea. Thus, the main purpose of this study was to describe the differences in health status between rural and urban elders and to compare several variables related to the health status of urban and rural elders in Korea.

MATERIALS AND METHODS

Sample

A total of 1,100 randomly selected non-institutionalized individuals older than 65 were included in the study. Urban elders included 200 elders from Seoul, 150 from Kwangjoo, and 150 from Pusan. Rural elders included 300 from Chula Province and 300 from Kyungsang Province.

Measurement

The health status of the elders was measured with a 15-item questionnaire which was revised from the Cornell Medical Index, ADL, IADL, and existing medical diagnosis given by a physician. Other variables included in the questionnaire were: 1) demographic variables; 2) social and family network variables; 3) socioeconomic variables; and 4) health behavior. Face to face interviews lasted from 30 to 60 minutes.

Data analysis

Data was analyzed using the SPSS PC program. The group differences were compared using the t-test and chi square test. A multiple regression analysis was done to control other variables besides the area of residence related to the health status of elders.

RESULTS

General characteristics

The general characteristics of the 1,100 elders interviewed are summarized in Table 1. There were more females (62%) than males (38%) in the study. The average age of the sample was 74 years. Close to 60 percent were between the ages of 65 and 74. Sixty-eight percent of the sample had no education. Almost one out of four subjects reported still working, mainly in agriculture. Fifty-one percent were living with their children while 49 percent were living alone or living with a spouse only.

A comparison of the general characteristics of urban and rural elders are presented in Table 1. Significantly more elderly women resided in rural areas (64.7%) than in urban areas (58.8%)s. More urban elders (60.2%) participated in religious activities than rural elders (49.3%). The level of education attained was significantly higher for urban elders than for rural elders. More rural elders (34.8%) worked than urban elders (9.6%). A significantly higher proportion of rural elders (65.2%) lived with their spouses or alone compared to urban elders (29.2%). The proportion of urban elders (70.8%) co-residing with their children was two times that of rural elders (34.8%).

Health behavior and health status

Table 2 presents a comparison of health behaviors between urban and rural elders in the study. Approx-

Table 1. General characteristics of the elders in the study

(n=1100)

		Total n (%)	Urban n (%)	Rural n (%)	p-value*
Age(year)	65-74	646 (58.8)	278 (55.6)	368 (61.3)	.004
	75-84	377 (34.2)	174 (34.8)	203 (33.8)	
	85-	77 (7.0)	48 (9.6)	29 (4.8)	
Sex	male	418 (38.0)	206 (41.2)	212 (35.3)	.045
	female	682 (62.0)	294 (58.8)	388 (64.7)	
Religion	yes	597 (54.3)	301 (60.2)	296 (49.3)	<.001
	no	503 (45.7)	199 (39.8)	304 (50.7)	
Education	none	749 (68.1)	264 (52.8)	485 (80.8)	<.001
	elementary	216 (19.6)	120 (24.0)	96 (16.0)	
	middle school	61 (5.5)	48 (9.6)	13 (2.2)	
	high schol	46 (4.2)	40 (8.0)	6 (1.0)	
	college	28 (2.5)	28 (5.6)	0 (0)	
Work status	working	257 (23.4)	48 (9.6)	209 (34.8)	<.001
	not working	843 (76.6)	452 (90.4)	391 (65.2)	
Spouse	yes	495 (45.0)	196 (39.3)	299 (49.8)	<.001
	no	605 (55.0)	304 (60.8)	301 (50.2)	
Living	alone/couple	537 (48.8)	146 (29.2)	391 (65.2)	<.001
	arrangement with child	563 (51.2)	354 (70.8)	209 (34.8)	

*: chi-square test

Table 2. Comparison of health behaviors of the elders in the study

(n=1100)

Health behaviors		Total	Urban n (%)	Rural n (%)	p-value*
Smoking	yes	332 (30.2)	150 (30.0)	182 (30.3)	.90
	no	768 (69.8)	350 (70.0)	418 (69.7)	
Drinking	yes	293 (26.3)	124 (24.8)	169 (28.2)	.208
	no	807 (73.7)	376 (75.2)	431 (7.8)	
Exercise	yes	106 (9.6)	91 (18.2)	15 (2.5)	<.001
	no	994 (90.4)	409 (81.8)	585 (97.5)	
Sleeping hours	<5 hours	120 (10.9)	48 (9.6)	72 (12.0)	.36
	5-10 hous	898 (81.6)	417 (83.4)	481 (80.1)	
	>10 hours	82 (7.5)	35 (7.0)	47 (7.9)	

*: chi-square test

imately 30 percent of elders in this study smoked cigarettes and 26 percent drank alcoholic beverages regularly. More urban elders (18.2%) reported that they exercised regularly than rural elders (2.5%). Only 9.6 percent reported that they exercised regularly. There was no significant difference between urban and rural elders in sleeping hours.

A comparison of the health status of urban and rural elders was conducted. Health status was measured by the number of health problems using modified Cornell Medical Index, ADL, IADL, and known medical diagnosis made by a physician. Table 3 shows the results. Among the 15 total health problems listed in the modified Cornell Medical Index, rural elders reported an average of 4.8 health problems while urban elders reported 4.0 health problems. This difference is statistically significant. Urban elders reported slightly higher scores for ADL and IADL than rural elders, however it was not statistically significant. When we looked at everyone in the study, 27.4 percent of elders were diagnosed with neuralgia. Close to 20 percent of the elders in

Table 3. Comparison of health status of urban and rural elders

Variable	Total n (%)	Urban n (%)	Rural n (%)	p-value
Average number of health problems	4.4	4.0	4.8	<.001*
Average ADL (6-18)	17.3	17.6	17.1	.01
Average IADL (7-21)	19.2	19.4	19.1	.14
Medical diagnosis				
Hypertension	217 (19.7)	109 (21.8)	108 (18.0)	.133†
Cardiac Problems	121 (11.0)	54 (10.8)	67 (11.2)	.923
Diabetes	75 (6.8)	44 (8.8)	31 (5.2)	.024
Arthritis	205 (18.6)	82 (16.4)	123 (20.5)	.097
Neuralgia	301 (27.4)	90 (18.0)	211 (35.2)	<.001

*: t-test
†: chi-square test

Table 4. Significant variables related to the health problems of elders

Variable	b	s.e. (b)	beta	p-value
Subjective health status	−1.14	0.09	−0.3	<.001
Gender (male=1, female=2)	0.78	0.16	0.14	<.001
Sleeping hours	−0.20	0.04	−0.13	<.001
Education	−0.19	0.09	−0.07	.035
IADL	−0.07	0.02	−0.07	.016
Area (urban=1, rural=2)	0.12	0.05	0.07	.020
Age	0.34	0.16	0.06	.034

this study reported having hypertension and arthritis and there was a difference in the types of health problems between urban and rural elders. While 35 percent of rural elders reported that they were diagnosed as having neuralgia, 18 percent of urban elders reported that they had neuralgia. Also, a significantly higher proportion of rural elders (20.5%) reported arthritis as compared to urban elders (16.4%). A significantly higher proportion of urban elders reported a medical diagnosis of diabetes (8.8%) as compared to rural elders (5.2%). Other medical problems reported by elders in the study were hypertension and cardiac problems, but there were no signicant differences between urban and rural elders.

Table 4 presents the results of the multiple regression analysis of significant variables related to the health status of the elderly. The multiple regression analysis was done to control some variables related to health status of elders since several characteristics of urban and rural elders in this study were significantly different and this may be the reason for the differences in health status of urban and rural elders rather than their residential areas. When the number of health problems of the elders was used as the dependent variable, the results of multiple regression analysis indicated that elders residing in rural areas had more health problems than urban elders ($p<.05$) even when all other variables were controlled. Other findings of the analysis were: elderly women had significantly more health problems than elderly men ($p<.000$); age was positively related with health problems ($p<.05$), the older the subjects, the greater number of health problems they had; a higher number of health problems was associated with less formal education ($p<.05$), fewer sleeping hours ($p<.000$), a poorer subjective rating of their health status ($p<.000$), and a lower IADL score ($p<.05$).

DISCUSSION

General characteristics

In this study, urban elders were older than rural

elders. The proportion of elders over 75 years was much higher in urban areas than in rural areas. This same finding was reported by Lee and Huh (1985). This age distribution is closely related to the living arrangements of urban and rural elders. While 71 percent of urban elders live with their children, only 35 percent of rural elders live with their children. In a 1985 study of the living arrangements of Korean elders, 85 percent of urban elders and 70 percent of rural elders co-resided with their children (Lee and Huh, 1985). The proportion of rural elders co-residing with their children declined to half of what it was 10 years ago. This is probably related to the effects of industrialization and urban migration of the younger generation in Korea. Also, it is possible that many rural elders who become old and frail may have given up on living independently and joined their children in urban areas.

It was also found that more urban elders were religious than rural elders. This may be the result of the close proximity to churches and their social functions in urban areas where there are more churches than in the rural areas. Churches also provide an important social network and support for many elders.

The proportion of working elders was much higher in rural areas (35%) than in urban areas (10%). This is reasonable since many rural elders participate in agricultural work where they do not have a mandatory retirement age. More rural elders live with their spouses than urban elders. This may explain why the proportion of rural elders co-residing with their children is much lower than with urban elders. Many studies reported that elderly married couples can maintain their independent living arrangements much better than unmarried elders because they can complement each others' weaknesses and help each other with ADL and IADL (Speare *et al.* 1991).

Urban elders have a higher education level than rural elders. This education level may indicate a certain selectivity factor among children of these elders. For example, elders with higher education are more likely to push their children to attain higher education and they are more likely to find jobs in urban areas. Close to 68 percent of the elders in this study reported no formal education. One of the reasons for the low educational level of this Korean elderly cohort is that they spent their childhood under Japanese colonization and had limited access to public education.

A 1985 study reported that 31 percent of elders over 65 were living independently and Choi reported that 41 percent of elders were living independently (Lee and Huh, 1985; Choi, 1994). According to the results of this study, 49 percent of elders were living independently, showing that the proportion of elders living independently has been increasing steadily.

Health behavior and health status

The proportion of elders who smoke cigarettes has decreased since 1985. Lee and Huh reported that 67 percent of elderly men and 38 percent of elderly women smoked cigarettes (Lee and Huh, 1985). This study found that 30 percent of elders were smokers. The proportion of elders who drink alcoholic beverages has also decreased since 1985. In the 1985 study, 75 percent of elderly men and 42 percent of elderly women in the study reported that they drank regularly (Lee and Huh, 1985). This study found that only 26.4 percent of the elders drank regularly. These two downward trends may be the result of public health campaigns that have focused on health promotion and healthy lifestyles.

Elders who had a regular exercise routine had fewer health problems than elders who did not have one. It is reasonable to consider that regular exercise will benefit the health of an individual. However, it is also likely that elders with fewer health problems can participate in exercise programs while elders with more health problems cannot. This study also found that elders with higher education have fewer health problems than elders with lower education. Elders with higher education may have better living conditions, healthier lifestyles, and seek appropriate health services when necessary. More urban elders reported that they exercise regularly as compared to rural elders. Since more rural elders are still working as farmers they might not feel the need to exercise nor have the time to exercise.

According to this study, rural elders had significantly more health problems than urban elders. There are not many studies comparing the health status of urban and rural elders. Nyman and coworkers reported that rural elders have more health problems such as hearing loss, memory loss, depres-

sion, and high blood pressure than urban elders (Nyman *et al.* 1991). The results of this study indicate that rural elders had a significantly higher proportion of neuralgia and arthritis diagnosed than urban elders, while more urban elders had diabetes.

A multiple regression analysis was done to control variables which are significantly related to the health status of elders to discern health status of urban and rural elders. According to this result, rural elders had more health problems than urban elders even after all other variables such as age, education, and gender were controlled. This may be due to differences in the availability of health care and the level of physical activity between urban and rural elders. While urban elders with health problems may be able to seek health care services relatively easily and adjust their activities accordingly, many rural elders cannot avoid their agricultural work and may not be able to travel long distances to visit health care centers.

Elderly women had more health problems than elderly men in this study. Park and Choi *et al.* also reported the same findings (Park, 1983; Choi *et al.* 1990). Other studies reported that while women reported more health problems than men, they utilized health care services less than men (von Mering and O'Rand, 1981).

Many studies reported that the subjective opinions of one's own health status were significantly related to the health problems of elders (Speare *et al.* 1991). This study also supports previous findings which suggested that self reports of one's own health status is a reliable index for the health status of individuals.

Summary and suggestions

The proportion of the elderly population is growing rapidly and the issue of their health care requires attention. This study focused on non-institutionalized elders in the community. An attempt was made to select samples from several representative rural and urban areas in Korea in order to make more accurate generalizations. The results of this study show significant differences in the health status of rural and urban elders.

This study employed the modified Cornell Medical Index, ADL, IADL, and known medical diagnosis made by a physician to measure the health status of elders. Many studies that have used the Cornell Medical Index in Korea (Park, 1983; Lee and Huh, 1985; Kim, 1989) and have not used the entire index since some items related to the assessment of mental health status were not applicable to Korean elders. Reliability of the revised index in the above studies showed that the total score of health status measured by the revised index was similar to that of the complete index. There are many studies using ADL and IADL as the indicators of the health status of elders. Gibson argued that ADL and IADL can measure the functional limitations and the results can be used to develop preventive health care services for elders (Gibson, 1984). However, this study showed that while the IADL score was significantly related to the health problems of elders, the ADL score was not. It will be useful to develop a comprehensive measurement which is a combination of the Cornell Medical Index, ADL, and IADL to measure the overall health status of elders.

Many elders not only need medical care but also social services since families are no longer capable or willing to take care of them. In Korea, the majority of large hospitals and doctors' offices are concentrated in large urban cities. The results of this study suggest that accessibility to health care services for rural elders needs to be improved. Health problems of elders are complex in nature since they may be the results of physical, psychological, and social problems during their lifetime. The type of health service they need may not be specialized care in a hospital setting. It may be more efficient and cost effective to develop a program within existing community health centers to manage chronic problems associated with aging.

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