A comparative study of ADL and IADL of residential home and home for the aged dwelling elderly

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Purpose: The purpose of this study was to investigate the activities of daily living (ADL) and instrumental activities of daily living (IADL) of residential home dwelling elderly and home for the aged dwelling elderly. In attempt to address medical professional caring the elderly, this comparative study examines the factors associated with dependence in the ADL and IADL in two samples of elderly people living in two different environments. **Methods:** The instrument of ADL and IADL widely used Katz ADL and IADL. Katz ADL and IADL was not a perfect fit for Korean. In concern with cultural factors Won developed K(Korean)-ADL and K-IADL scale reflecting Korean's own language expression and cultural factors in year of 2002. The assessment tool of this study was K-ADL and K-IADL. Differences of ADL and IADL were tested for statistical significance using group *t*-test and $x2$ test for comparisons between the residential home dwelling elderly and the home for the aged dwelling elderly. **Results:** Comparison of assessment for K-ADL and K-IADL in two different dwelling types was significant. Performance of ADL and IADL depend upon their living environment such as social status, number of children, income, present illness as well as age group. This study also showed significant differences of performance in some activities of ADL and IADL between the elderly who live in their own home and live in home for the aged. Comparison of performance of ADL and IADL in different dwelling types revealed that only one item of ADL was significant but only one item of IADL was not significant. It means that IADL is more difficult activities in the home for the aged dwelling elderly than the residential home dwelling elderly. The coupled elderly has more independent in some ADL and IADL activities compared with the single elderly. **Conclusion:** Using K-ADL and K-IADL is more convenient for Korean elderly. Medical professional consider some factors like dwelling style, social status, existing diseases and disabilities in order to care the elderly and train him/her activities of daily living as well as instrumental activities of daily living. Medical professional, especially physical and occupational therapist emphasize the training items which are bathing of ADL and grooming, housework, preparing meals, laundry, traveling, public transportation, shopping, using telephone and taking medicine of IADL based on the result of this study. ***(J Kor Soc Phys Ther 2006;18(4):61-70)***

Key Words : Activities of Daily Living (ADL), Instrumental ADL, The elderly, Dwelling style

Ⅰ. Introduction

Based on Korean Social Index population of the elderly is rapidly increased. In 1975 the elderly composed 3.5% of total population and in 2002 percentage of the elderly rapidly increased up to 7.74% (National Statistical Office, 2005). It is reason that medical advancement as well as improvement in social and economic factors has brought about a lengthening of average life expectancy. Even the life expectancy is increased the elderly still suffer from geriatric diseases and disabilities (Purser et al, 2005). Common geriatric diseases and disabilities affect their quality of life

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(Valderrama-Gama et al, 2002). In order to improve quality of life of the elderly, one of important factors is the improvement of ADL and IADL performance in the elderly (Chen and Wilmoth, 2004).

Understanding ability of ADL and IADL in the elderly is relatively important in caring the elderly. In connection with this matter, medical professional especially physical and occupational therapist should include ADL and IADL training for the elderly.

ADL and IADL are one of important functional assesment which shows the necessity of caregiver and further education (Won, et al 2002a). ADL includes dressing, eating, ambulation, toileting and bathing invented by Katz and widely used this assessment tool (Katz and Akpom, 1976).

IADL composed of daily living by using instruments, like using telephone, traveling, shopping, preparing meals, housework, taking medicine, and managing money. Using the said instruments the examiner considers communication and culture. Because the cultural differences like using chopstick, Korean costume and the others should be considered (Won, 2002). Therefore Won et al (2002b) developed K-ADL and K-IADL by using the revised scale and Korean language.

In Korea, there are two kinds of dwelling style for the elderly which are residential home and home for the aged. For the better lifestyle for the elderly, medical professionals include ADL and IADL training and consider the differences of dwelling style.

The purpose of this study was to find out the differences of performances in ADL and IADL between residential home dwelling elderly and the home for the aged dwelling elderly. It contribute to caring the elderly by medical professionals who are training the elderly for ADL and IADL, and also will help the elderly in their decision making and quality of life.

II. Methods

This study took place in a residential home as well as home for the aged from December, 2005 to March, 2006 in Iksan city, Korea.

We visited 108 residential home and 113 home for the aged and interviewed them using K-ADL and K-IADL questionnaire by trained interviewers. Two hundred twenty one elderly aged 65 years and over in Iksan City were examined using the questionnaire. Interviews pertaining to K-ADL and K-IADL, anthropometric examination (age, sex, occupation, social status, number of children, income), past medical history and present illness, and dwelling status were included in the assessment.

Statistical analyses were performed using statistical software packages SPSS WIN 10.0 (SPSS, Chicago, IL, USA). Differences were tested for statistical significance using unpaired *t*-test, χ^2 test, Mann-Whitney test and Kruskal Wallis test for comparisons between the residential home dwelling elderly and the home for the aged dwelling elderly, between the coupled elderly and the single elderly.

III. Results

1. Characteristics of the two groups of the elderly

The characteristics of the two groups of the elderly are shown Table 1 and 2. Comparison between the residential home dwelling elderly and the home for the aged dwelling elderly are significantly different in some aspects.

First aspect as gender, female is much higher population in the home for the aged than male ($p<0.001$). Second aspect as civil status, more single stayed in home for the aged than residential home while more couple stayed in residential home than home for the aged male ($p<0.001$).

Third aspect as number of child, the elderly who has

lesser children stayed in home for the aged male ($p<0.001$). Fourth aspect as income, the elderly who has lesser income stayed in home for the aged ($p<0.001$). Fifth aspect as present illness, there were no significant difference between the residential home dwelling elderly and the home for the aged dwelling elderly. In this survey, most common present illness among the elderly is arthritis. But most of the elderly complaint their past medical problems and some of past illness still is bothering them.

Table 1. Characteristics of residential home dwelling elderly and the home for the aged dwelling elderly.

Characteristic	Residential home (n=107)	Home for the aged (n=113)	t	p
Age	73.52±5.63	81.62±6.97	-9.446	.000
Income (thousand Won)	456.035±530,12	146.69±188.28	4.314	.000
Number of children	3.95±1.73	2.23±2.30	6.281	.000

Table 2. Characteristic frequencies of residential home dwelling elderly and the home for the aged dwelling elderly.

Characteristic	Residential home (n=108)	Home for the aged (n=113)	χ^2	p
Gender				
Male	69(63.9%)	11(9.8%)		
Female	39(17.7%)	101(45.9%)	69.457	.000
Age				
65-70	35(15.8%)	9(4.1%)		
71-75	33(14.9%)	12(5.4%)		
76-80	26(11.8%)	26(11.8%)		
81-85	13(5.9%)	31(14.0%)		
Over 86	1(.5%)	35(15.8%)	64.558	.000
Civil status				
Spouse	75(33.9%)	1(0.5%)		
Single	33(14.9%)	112(50.7%)	115.04	.000
Present illness				
No	56(25.3%)	45(20.4%)		
Musculoskeletal	27(12.2%)	41(18.6%)		
Cardiovascular	14(6.3%)	20(9.0%)		
Visceral	9(4.1%)	5(2.3%)		
Nervous	2(.9%)	2(.9%)	6.172	.187

2. Comparison of performance of ADL between the two groups

Table 3 shows the ADL of residential home dwelling elderly and the home for the aged dwelling elderly. Among ADL items, washing ($p<0.05$), bathing ($p<0.001$), eating ($p<0.01$) and transfer ($p<0.01$) activities are significantly lower in the elderly of home for the aged compared with the elderly of residential home, whereas dressing, toileting and sphincter control activities did not differ significantly.

Table 3. Comparison of performance of ADL between residential home dwelling elderly and the home for the aged dwelling elderly

ADL	Grade	Residential home (n=108)	Home for the aged (n=113)	U	p
Dressing	Self	108(48.9%)	110(49.8%)		
	Partial dependent	0	1(0.5%)		
	Full dependent	0	2(0.9%)	5832	.086
Washing	Self	108(48.9%)	109(49.3%)		
	Partial dependent	0	1(0.5%)		
	Full dependent	0	3(1.4%)	5886	.049
Bathing	Self	108(48.9%)	91(41.2%)		
	Partial dependent	0	12(5.4%)		
	Full dependent	0	10(4.5%)	4914	.000
Eating	Self	108(48.9%)	106(48.0%)		
	Partial dependent	0	7(3.2%)		
	Full dependent	0	0	5724	.009
Transfer	Self	108(48.9%)	105(47.5%)		
	Partial dependent	0	6(2.7%)		
	Full dependent	0	2(.9%)	5670	.005
Toileting	Self	108(48.9%)	110(49.8%)		
	Partial dependent	0	2(.9%)		
	Full dependent	0	1(.5%)	5940	.089
Sphincter control	Self	73(33.0%)	87(39.4%)		
	Partial dependent	34(15.4%)	25(11.3%)		
	Full dependent	1(.5%)	1(.5%)	5533	.123

3. Comparison of performance of IADL between the two groups

The comparison of performance of IADL between two groups is shown in table 4. Except housework and laundry, all activities are differ significantly between the two different residential groups. Grooming, preparing meals, outgoing, public transportation, shopping, using telephone and taking medicine activities are significantly lower in the elderly of home for the aged compared with the elderly of residential home ($p<0.001$), managing money, also lower in the elderly of home for the aged ($p<0.05$).

Table 4. Comparison of performance of IADL between residential home dwelling elderly and the home for the aged dwelling elderly

IADL	Grade	Residential home (n=108)	Home for the aged (n=113)	U	p
Grooming	Self	108(48.9%)	80(36.2%)		
	Partial dependent	0	24(10.9%)		
	Full dependent	0	9(4.1%)	4320	.000
Housework	Self	65(29.4%)	61(27.6%)		
	Partial dependent	6(2.7%)	17(7.7%)		
	Full dependent	30(13.6%)	42(19.0%)	5891	.711
Preparing meals	Self	35(15.9%)	9(4.1%)		
	Partial dependent	33(14.9%)	12(5.4%)		
	Full dependent	40(18.1%)	92(41.6%)	4255.5	.000
Laundry	Self	56(25.3%)	58(26.2%)		
	Partial dependent	7(3.2%)	15(6.8%)		
	Full dependent	35(15.9%)	50(22.6%)	5448.5	.167
Outgoing	Self	108(48.9%)	85(38.5%)		
	Partial dependent	0	26(11.8%)		
	Full dependent	0	2(.9%)	4590	.000
Public transport	Self	98(44.3%)	60(27.1%)		
	Partial dependent	9(4.1%)	19(8.6%)		
	Full dependent	1(.5%)	34(15.4%)	3676	.000
Shopping	Self	104(47.7%)	78(35.8%)		
	Partial dependent	3(1.4%)	20(9.2%)		
	Full dependent	1(.5%)	12(5.5%)	4415	.000
Managing money	Self	91(41.2%)	78(35.3%)		
	Partial dependent	5(2.3%)	9(4.1%)		
	Full dependent	12(5.5%)	26(11.8%)	5212.5	.012
Using telephone	Self	100(45.2%)	80(36.2%)		
	Partial dependent	6(2.7%)	10(4.5%)		
	Full dependent	2(1.0%)	23(10.4%)	4720.5	.000
Taking medicine	Self	107(48.4%)	94(42.5%)		
	Partial dependent	1(0.5%)	11(5.0%)		
	Full dependent	0	8(3.6%)	5027	.000

4. Comparison of performance of ADL and IADL between the coupled elderly and the single elderly

Table 5 shows the ADL and IADL of the coupled elderly and the single elderly. Among ADL items, bathing ($p<0.001$) and transfer ($p<0.05$) activities are significantly lower in the single elderly compared with the coupled elderly, whereas dressing, washing, eating, toileting and sphincter control activities did not differ significantly. In IADL, grooming, outgoing, public transportation, shopping, using telephone activities are significantly lower in the single elderly compared with the coupled elderly ($p<0.001$), preparing meals and taking medicine, also lower in the single elderly ($p<0.01$). Housework, laundry and managing money activities did not differ significantly.

Table 5. Comparison of performance of ADL and IADL between the coupled elderly and the single elderly by Mann-Whitney U test

	Coupled elderly Mean Rank	Single elderly Mean Rank	U	p
ADL				
Dressing	107.00	109.30	5175.0	.204
Washing	107.50	110.55	5212.5	.145
Bathing	98.50	115.27	4537.5	.000
Eating	106.00	111.34	5100.0	.052
Transfer	105.50	111.60	5062.5	.037
Toileting	108.00	110.29	5250.0	.208
Sphincter control	113.02	107.65	5098.5	.441
IADL				
Grooming	93.50	117.89	4162.5	.000
Housework	105.28	110.96	5046.0	.479
Preparing meals	93.75	116.35	4181.0	.007
Laundry	113.88	106.42	4959.0	.366
Outgoing	96.00	116.58	4350.0	.000
Public transport	83.41	123.19	3405.5	.000
Shopping	91.31	116.94	3998.0	.000
Managing money	101.09	113.91	4732.0	.054
Using telephone	95.43	116.88	4307.5	.000
Taking medicine	99.90	112.25	4617.5	.005

5. Comparison of performance of ADL and IADL according to age group

The comparison of performance of ADL and IADL according to age group is shown in table 5. Using Kruskal Wallis test, higher score means less independent of ADL and IADL. In this study, the age group is one of significant factors in performance of some ADL and IADL items. Bathing in ADL and grooming, outgoing, public transportation, and shopping and using telephone in IADL are activities which show less performance to the older people.

Table 6. Comparison of performance of ADL and IADL according to age group (by Kruskal Wallis U test)

	<70 n=44	71-75 n=45	76-80 n=50	81-85 n=43	86-90 n=26	>91 n=9	U	p
ADL								
Dressing	107.50	107.50	107.50	112.53	111.69	107.50	6.566	.255
Washing	108.00	108.00	110.16	112.95	112.23	108.00	4.198	.521
Bathing	101.38	101.32	107.41	119.00	120.79	135.06	17.631	.003
Eating	106.50	108.93	110.79	111.48	110.71	118.67	3.777	.582
Transfer	106.00	108.41	108.13	115.95	114.50	106.00	7.610	.179
Toileting	108.50	108.50	110.64	111.01	112.69	108.50	2.917	.713
Sphincter control	112.74	107.19	120.42	104.66	96.69	116.17	5.169	.396
IADL								
Grooming	95.89	96.20	104.44	128.41	127.08	140.17		.000
Housework	103.24	103.24	117.43	115.19	103.73	114.61	2.861	.721
Preparing meals	99.06	97.75	109.71	116.83	127.77	117.00	6.540	.257
Laundry	108.83	108.65	114.98	113.28	91.85	118.39	3.270	.658
Outgoing	98.47	100.82	106.91	123.13	121.04	133.72	19.291	.002
Public transport	94.91	90.86	98.87	129.43	145.27	145.67	37.014	.000
Shopping	95.58	97.81	102.08	116.07	130.18	163.67	34.902	.000
Managing money	104.19	104.39	107.01	109.60	129.48	129.06	7.523	.185
Using telephone	96.81	103.23	104.36	119.64	128.40	140.00	17.434	.004
Taking medicine	101.36	106.31	105.30	114.17	120.10	112.00	8.441	.134

IV. Discussion

Understanding ADL and IADL for the elderly is relatively important for quality of life (QOL), caring the elderly, prevention of falling and improving activities of daily living (Guccione, 1993). Ho et. al. (2002) mentioned that ADL independence, working daily and components of QOL were negatively associated with ADL dependence. The strong relationship of ADL dependence with QOL was shown by its statistically significant link of various components of QOL measure.

This study was performed in Iksan city and investigated anthropometric data, differences of performance of ADL and IADL in different dwelling groups. First, anthropometric examination as minor questionnaire in this paper provided useful information. Majority of the elderly who live at home for the aged is female, single or widowed and older people. Knowing Korean culture is easy to understand that the elderly who has more children especially son has less chance to stay home for the aged. Present illness is one of factors which the elderly decide to stay at home for the aged. Also income is one of factors choosing home for the aged for their staying. This results were similar previous studies in several factors of social status (Song and Kim, 2002)

Second, for comparison study of ADL and IADL performance in different dwelling groups was done by using K-ADL and K-IADL questionnaire. Won et. al. (2002) reported the validity and reliability of K-ADL and K-IADL as a tool of ADL and IADL evaluation for Korean people. We used new K-ADL and K-IADL questionnaire for this study.

We found out the differences of ability doing K-ADL and K-IADL between residential home dwelling elderly and home for the aged dwelling elderly. In general, the elderly who are staying at home for the aged had more difficulties of performing ADL and IADL. Bathing in ADL is one of significant activities in comparison between two different dwelling groups. Grooming, housework, preparing meals, laundry, traveling, public transportation, shopping, using telephone and taking medicine in IADL are significant in comparison between two different dwelling groups. This result may help for therapist to train the elderly effectively because they can focus on the mentioned activities.

Recently, Yoon (2001) studied the performance of ADL and IADL of the elderly, number of 5,058. On his report, most difficult activity is bathing and followed by sphincter control, eating, toileting, and transfer in ADL while most difficult activity in IADL is managing money and followed by using telephone, public transportation, grooming and taking medicine, in sequence.

Comparison of performance of ADL and IADL between the coupled elderly and the single elderly had significant results. Bathing in ADL and grooming, traveling, public transportation, shopping and using telephone in IADL were more dependent in the single elderly than the coupled elderly. Our results agree with a previous report (Yoon, 2001) excepts managing money was not an activity for high dependent in the elderly. These results indicate that the coupled elderly were statistically significant less dependent in ADL and IADL. Miller et al (2002), Kawamoto et al (2004) reported that age is among the better established factor associated with ADL dependence. Like his report, our study shows that the older elderly are at a high risk of becoming ADL dependent.

Many factors such as visiting program, adequate physical activity and physical training can improve the performance of ADL and IADL for the elderly (Hwang et al, 2003; Montagnini et al, 2003; Studenski et al, 2005; Behrman et al, 2005). The results of this survey would be used for developing the program for ADL and IADL improvement.

V. Conclusion

We have found that majority of the elderly who live at

home for the aged is female, single or widowed and older people. The elderly who has more children especially son has less chance to stay home for the aged. Present illness and low income are the factors which the elderly decide to stay at home for the aged. We postulate that the home for the aged dwelling elderly had more difficulties of performing ADL and IADL. Therapist may focus on some activities such as bathing and sphincter control in the ADL training and almost all activities in the IADL training. Age is the established factor associated with ADL and IADL dependence. The coupled elderly were statistically significant less dependent in ADL and IADL.

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노인의 거주 형태에 따른 일상생활동작(ADL) 및 도구적 일상생활 동작(IADL)의 수행능력 비교

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<국문초록>

연구목적: 본 연구는 가정 거주노인과 시설 거주 노인의 일상생활동작(ADL)과 도구적 일상생활동작(IADL)을 비교 분석하여 노인 돌봄에 관여하는 의료 종사자, 특히 물리치료사와 작업치료사의 업무에 도움을 주고자 시행하였다. 방법: 일상생활동작 및 도구적 일상생활동작의 검진은 한국형 일상생활동작 평가서와 도구적 일상생활동작 평가서를 사용하여 거주 형태가 다른 두 노인 집단의 평가 결과를 분석하였다. 결과: 노인들의 일상생활동작과 도구적 일상생활동작의 수행 능력은 부부 동거, 자녀 수, 수입, 현재 앓고 있는 질병 및 나이에 의해 영향을 받고 있는 것으로 나타났다. 또한 일상생활동작 중에는 한 가지 동작이 도구적 일상생활동작은 한 가지 동작을 제외한 모든 동작에서 수행 능력의 차이를 보이고 있다. 부부가 함께 동거하는 노인이 홀로 사는 노인에 비해 전반적으로 일상생활 활동이 원활한 것으로 나타났다. 결론: 한국형 일상생활동작 평가서와 도구적 일상생활동작 평가서가 한국 노인의 일상생활 활동을 평가하는데 보다 사용하기 좋았다. 노인을 돌보는 의료 종사자 특히 물리치료사 및 작업치료사는 노인의 일상생활 활동을 증진시키기 위해 훈련을 시행한다면 일상생활동작 훈련에서는 목욕하기에 중점을 두고 도구적 일상생활동작의 훈련에서는 거의 모든 동작을 훈련 시켜야 할 것을 조언한다.

핵심단어 : 일상생활동작, 도구적 일상생활동작, 노인, 거주 형태