

Comparison of Utilization of Physical Therapy for Elderly Persons in Urban and Rural Areas in Honam

This study was carried out survey to compare using status of physical therapy for elderly persons between urban and rural area in Honam. There were 16 places consisting of general clinics, departments of family medicine, pain medicine, and orthopedics that run outpatient physical therapy. This study distributed 636 questionnaires in total and collected 400 responses. Regionally, 200 responses out of 311 questionnaires from Gwangju and 200 responses out of 325 questionnaires from Jeollanam-do and Jeollabuk-do were collected. Regionally speaking, Gwangju was 62% while Jeollanam-do and Jeollabuk-do regions were 88%, indicating patients in rural areas employed more public transportation, which was statistically significantly different. There was a difference between urban and rural areas with regard to questions regarding improvement with physical therapy. Factors related to the number of physical therapy visits per week that showed a significant difference between urban and rural areas found by the linear regression analysis result were working hours, whether the patient exercised or not, and pain stress. This result suggest that it is necessary to reduce working hours and pain stress experienced by rural elderlies as well as to encourage regular exercise via national polices.

Key words: *Elderly; Utilization of Physical Therapy; Urban; Rural*

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INTRODUCTION

Following a worldwide trend, South Korea is one of the fastest aging societies and officially become an aging society, as defined by the United Nations, in 2000, with approximately 7.2% of its population being 65 or older. According to Statistics Korea, the proportion of citizens over 65 years was 11.8% as of 2012; this has increased continuously from 3.1% as of 1970 and it is projected to reach 24.3% and 37.4% in 2030 and 2050 respectively(1).

The increase in the elderly population has caused many social problems. Among them, the most severe difficulties facing elderlies were financial hardship (40.2%) and health problems (39.8%)(2). The health issues of elderlies lead to increased medical costs. According to statistical data about medical fees published by the National Health Insurance Corporation in Korea, the medical cost of elderlies covered by the health insurance was 14.8384 trillion won in 2011, which accounted for 32.2% of total medical insurance

cost (46,760 trillion won). It had increased by 7.6% compared to the previous year and is still increasing annually(3).

Along with the increase of the medical cost for elderlies, physical therapy costs for elderlies has also increased by 25% as of 2001 compared to that of 2000. The amount as of 2001 was 233.1 billion won, which had increased by 219.4% compared to that of 1998(4). It increased to 574.5 billion won in 2006, 680.3 billion won in 2007, 726.9 billion won in 2008, 841.8 billion won in 2009, and 938.5 billion won in 2010. This is an annual increase of 13.05% on average(5).

Since the demand and cost of physical therapy for elderlies has increased rapidly and there is a difference in the use of physical therapy by elderlies according to regions, it is necessary to study the status of the use of physical therapy by elderlies according to regional difference and factors that affect the difference of the use. However, few studies have been conducted on the status and the factors of

the use of physical therapy by elderlies, although some studies on the comparison of health conditions between urban and rural elderlies according to region can be found.

Accordingly, this study examined rural areas Jeollanam-do (20.9%) and Jeollabuk-do (17.0%) of Honam in South Korea, which are proportionally the first and third highest physical therapy uses by elderlies(1). It also determined the use of physical therapy by elderlies in Gwangju, which is a representative metropolitan region, and compared and analyzed the difference between the urban and rural areas.

METHODS

Subjects

The hospitals in this study were selected by referring to a hospital list published by a local medical association. There were 16 places consisting of general clinics, departments of family medicine, pain

medicine, and orthopedics that run outpatient physical therapy. Subjects were chosen from elderly physical therapy patients. Surgical and hospitalized patients were removed from the survey.

To randomly select subjects, potential participants whose final phone number digit was a multiple of three were selected to take the survey. The study purpose and intentions were explained to subjects who satisfied the selection criteria. A questionnaire was given to subjects who were willing to participate in the study. Subjects read the questionnaire and answered themselves or researchers read the questionnaire for them and subjects answered the questionnaire. The data collection period was September 2012 to October 2012, which was about eight weeks. The data collection method used direct visit throughout the survey. General characteristics of the subjects are shown in Table 1.

This study distributed 636 questionnaires in total and collected 400 responses. Approximately 236 questionnaires were not collected for various reasons. Regionally, 200 responses out of 311 questionnaires from Gwangju and 200 responses out of 325

Table 1. Characteristics of study participants

General characteristics		Residence region		Total (N)
		Urban N(%)	Rural N(%)	
Sex	Male	68(34)	71(35.5)	139
	Female	132(66)	129(64.5)	261
Age	65~70 yrs.	90(45)	88(44)	178
	71~80 yrs.	93(46.5)	89(44.5)	182
	Over 81 yrs.	17(0.5)	23(11.5)	40
Education	Elementary	45(22.5)	100(50)	145
	Middle	83(41.5)	79(39.5)	162
	High	63(31.5)	21(10.5)	84
	University	9(4.5)	0(0)	9
Employment	Unemployed & housewife	113(56.5)	10(5)	123
	Agriculture	0(0)	157(78.5)	157
	Self-employed and small business	68(34)	33(16.5)	101
	Service	19(9.5)	0(0)	19
Working hour	0 hour	113(56.5)	10(5)	123
	0~20 hour	17(8.5)	17(8.5)	34
	20~40 hour	51(25.5)	87(43.5)	138
	Over 40 hour	19(9.5)	86(43)	105
Exercise	Regular exercise	63(31.5)	19(9.5)	82
	No exercise	137(68.5)	181(90.5)	318

questionnaires from Jeollanam-do and Jeollabuk-do were collected. The collection rate was 64.3% for the urban area and 61.5% for the rural area.

Procedures

This study is a survey that compares and analyzes the difference regarding the use of physical therapy by elderlies living in urban and rural areas of Homan. The survey was made with reference to questionnaires in previous studies on the use of physical therapy in urban and rural areas(6) and satisfaction with physical therapy services in care hospitals(7). A preliminary study was conducted with 30 patients in physical therapy at A Family Medicine in

Chungjeong-ro, Jeongeup-si, and Jeollabuk-do. Two physical therapists that practice elderly physical therapy at B Pain Medicine in Dongmun-daero, Gwangju Buk-gu, and C Clinic in Hampyeong-gun and Jeollanam-do reviewed and revised the preliminary study results to finalize our survey. The survey consists of close-ended response questions; questions regarding whether exercises are performed used a double-bounded dichotomous choice method while the other questions employed a multiple-choice method.

The pain stress of elderlies was measured using the Geriatric Pain Measure-Korea Version (GPM-K). In this study, a modified scale, which was originally translated by Lee(8) and used in studies on chronic

Table 2. Physical therapy use by study participants | (N=400)

Current status of physical therapy use		Residence region		TotalN(%)	p
		Urban N(%)	Rural N(%)		
Transportation	Walking	57(28.5)	18(9)	75(18.7)	.000*
	Public	124(62)	176(88)	300(75.0)	
	Car	19(9.5)	6(3)	25(6.2)	
Companion	Alone	15(7.5)	17(8.5)	32(8.0)	.228
	Family	5(2.5)	9(4.5)	14(3.5)	
	Neighbor or Acquaintance	171(85.5)	157(78.5)	328(82.0)	
	Friend	9(4.5)	17(8.5)	26(6.5)	
Satisfaction on physical therapy	Satisfied	111(55.5)	107(53.5)	218(54.5)	.734
	Neutral	82(41)	88(44)	170(42.5)	
	Dissatisfied	7(3.5)	5(2.5)	12(3.0)	
Reuse of physical therapy	Reuse	171(85.5)	168(84)	339(84.7)	.677
	Neutral	29(14.5)	32(16)	61(15.3)	
Recommendation of physical therapy	Recommend	163(81.5)	160(80)	323(80.7)	.704
	Neutral	37(18.5)	40(20)	77(19.3)	
Reason for satisfaction	Therapy effect	124(62)	133(66.5)	257(64.2)	.348
	Therapist ability	76(38)	67(33.5)	143(35.8)	
Cost of physical therapy	1000 won	44(22)	45(22.5)	89(22.2)	.904
	1500 won	156(78)	155(77.5)	311(77.8)	
Reasonability of the cost	Acceptable	176(88)	179(89.5)	355(88.7)	.635
	Inexpensive	24(12)	21(10.5)	45(11.3)	
Improvement of physical therapy	Expansion of treatment time	80(40)	85(42.5)	165(41.2)	.026*
	Expansion of body treatment area	58(29)	76(38)	134(33.5)	
	Improvements in environment and equipment	38(19)	19(9.5)	57(14.2)	
	Improvement of the human resource	24(12)	20(10)	44(11.0)	

*p < .05

pain-related factors and response to pain(9) and validity and reliability of the Korean version elderly pain assessment measure(10), was employed. The scale consists of 19 questions with a “yes” or “no” response, and had 0 to 19 points as a score range. The survey time was seven to eight minutes per elderly patient on average. The reliability of the general characteristics was Cronbach Alpha 0.522 while the reliability of the use of physical therapy was Cronbach Alpha 0.543.

Data analysis

The data collected using the survey was analyzed via SPSS Windows version 18.0 with the following statistical methods: Frequency analysis was used to verify the general characteristics of subjects, while cross-analysis and independent samples T-test was used to verify a difference between urban and rural areas. A linear regression analysis was used to perform factor analysis with regard to differences of frequencies of physical therapy visit per week. To test the statistical significance, a significance level was set to $\alpha=0.05$.

RESULTS

Physical therapy use by study subjects

Approximately 75% of 400 respondents used public transportation to visit clinics. Regionally speaking, Gwangju was 62% while Jeollanam-do and Jeollabuk-do regions were 88%, indicating patients in rural areas employed more public transportation, which was statistically significantly different($p<.05$). There was a difference between urban and rural areas with regard to questions regarding improvement with physical therapy. Some 400 subjects requested expansion of treatment time (41.25%), expansion of body treatment area(33.5%), improvements in treatment room and equipment(14.2%), and improvement in human resources in physical therapy (11%). Regionally, subjects in Gwangju said expansion of treatment time(40%), expansion of body treatment area(29%), improvements in treatment room environment and equipment(19%), and improvement in the treatment human resource(12%) while subjects in Jeollanam-do and Jeollabuk-do regions asked for expansion of treatment time(42.5%), expansion of

Table 3. Physical therapy use by study participants II

Current status of physical therapy use		Residence region		TotalN(%)	p
		Urban N(%)	Rural N(%)		
Treatment body area	Neck	33(16.5)	23(11.5)	56(14.0)	.398
	shoulder	25(12.5)	33(16.5)	58(14.5)	
	Low back	69(34.5)	72(36)	141(35.2)	
	Knee	73(36)	72(36)	145(36.2)	
Diagnosis	Arthritis	73(36.5)	72(36)	145(36.2)	.105
	Disk	89(44.5)	91(45.5)	180(45.0)	
	Stenosis	10(5)	2(1)	12(3.0)	
	Don't know	28(14)	35(17.5)	63(15.7)	
Number of physical therapy visits per week	twice or less	99(49.5)	16(8)	106(26.5)	.000*
	3 times	79(39.5)	100(50)	179(44.7)	
	4 times	15(7.5)	64(32)	79(19.7)	
	5 times or more	7(3.5)	20(10)	27(6.7)	
Reason for clinic selection	Location	34(17)	18(9)	52(13.0)	.055
	Facility	17(8.5)	20(10)	37(9.2)	
	Treatment effect	116(58)	136(68)	252(63.0)	
	Staff attitude	33(16.5)	26(13)	59(14.7)	

* $p<.05$

Table 4. Expression of the results on the linear regression analysis w.r.t number of physical therapy visits per week

Expression
No of physical therapy visits per week = 0.083 + 0.062 * working hour
No of physical therapy visits per week = 0.083 - 0.542 * exercise or not
No of physical therapy visits per week = 0.083 + 0.141 * pain stress

body treatment area(38%), improvements in the treatment room environment and equipment(9.5%), and improvement in the treatment human resource (10%). In both urban and rural regions, expansions of treatment time as well as expansions of body treatment area were two of the most requested improvements. Statistically, treatment room environment and equipment improvement was requested more in rural areas than urban areas(p<.05). There were no significant differences in satisfaction with physical therapy, reuse of physical therapy, recommendations regarding physical therapy, satisfaction factors, cost of physical therapy, and reasonability of the cost between urban and rural areas(p>.05)(Table 2).

With regard to body treatment areas, knees were highest in both urban(36%) and rural areas(36%) followed by low back(urban 34.5%, rural 36%) and shoulder(urban 12.5%, rural 16.5%), and neck(urban 16.5%, rural 11.5%). There was no significant difference in body treatment areas between urban and rural areas(p>.05). With regard to diagnosed diseases, disk was the highest(urban 44.5%, rural 45.5%), followed by arthritis(urban 36.5%, rural 36%), do not know(urban 14%, rural 17.5%), and stenosis (urban 5%, rural 1%). There was no significant difference in diagnosed diseases between urban and rural areas(p>.05). With regard to the reason for the selection of clinics, treatment effect was the

highest(urban 58%, rural 68%), followed by attitude of medical staff (urban 16.5%, rural 13%), location of the clinic(urban 17%, rural 9%), and facilities of the clinic(urban 8.5%, rural 10%). There was no significant difference in reason for clinic selection between urban and rural areas(p>.05)(Table 3).

Factors related to frequencies of physical therapy visits per week

The number of physical therapy visits per week showed that three times a week was the highest frequency(urban 39.5%, rural 50%), followed by twice a week(urban 49.5%, rural 8%), four times a week (urban 7.5%, rural 32%), and five times or more a week(urban 3.5% rural 10%). There was no significant difference in the number of physical therapy visits per week between urban and rural areas(p<.05). Factors related to the number of physical therapy visits per week that showed a significant difference between urban and rural areas found by the linear regression analysis result were working hours, whether the patient exercised or not, and pain stress. These factors explained 50.5% of the reasons for the difference(p<.05)(Table 3)(Table 4)(Table 5).

DISCUSSION

Subjects in both in urban and rural areas used public transportation the most to visit physical therapy clinics. A study by Lee(11) reported that medical facilities and staff were not fairly allocated between urban and rural areas. Accordingly, medical facilities in rural areas were generally located far from their residence areas whereas patients living in urban areas could visit physical therapy clinics on foot because clinics were located closer to their residence areas. With regard to improvements in physical therapy,

Table 5. Results of the linear regression analysis w.r.t number of physical therapy visits per week R²=0.505

	Non-standardized coefficients		Standardized coefficients	t	p
	B	Standard error	Beta		
(constant)	.083	.275	.084	.303	.762
Working hour	.062	.036	-.252	1.746	.002*
Exercise or not	-.542	.105	.299	-5.180	.000*
Pain stress	.141	.025		5.594	.000*

*p< .05

subjects in both urban and rural areas requested expansions of treatment time and body treatment areas. However, subjects in the urban area requested improvements in the treatment room environment and equipment more, which was statistically significantly different. This result is consistent with a study result(12) in which urban elderly patients selected physical therapy clinics mainly based on medical technology and equipment, whereas rural patients preferred more friendly staff and medical service. In addition, as mentioned in a study by Kang(13), professional and specialized physical therapy, including quality improvement in services of physical therapy should be provided to patients rather than superficial physical therapy treatment to satisfy demand from patients.

With respect to the number of physical therapy visits per week, twice a week in the urban area and three times a week in the rural areas were the most frequent visit times, which showed that rural areas had more physical therapy per week. This result was similar to a previous study result(6) on factor analysis related to physical therapy uses in public health centers in urban and rural regions. The factor analysis result of the number of physical therapy visits per week showed that working hour, whether the subject exercised or not, and pain stress were three main factors. For example, the longer the working hours, the more frequent the physical therapy visits. In the urban area, the number of the unemployed and homemakers was large proportionally, whereas most of the subjects in rural areas worked as farmers and thus their working hours were longer than that of urban area participants. Previous studies(14, 15, 16) also reported that elderlies in rural areas were more employed than in urban areas, where most elderlies were retired and unemployed. Elderlies in rural areas were employed in the agriculture industry.

The study results showed that when regular exercises were performed, the number of physical therapy visits was reduced. Subjects in urban region had more regular exercise than in rural regions. This result is consistent with the result of health assessment and regular exercise in a social survey published by Statistics Korea in 2010, in which 43.7% of urban elderlies and 23.8% of rural elderlies performed regular exercise(1). Therefore, it is necessary to maintain national programs that encourage regular exercises in daily living. The higher the pain stress, the more frequent the physical therapy visits were. Subjects in rural regions experienced higher pain stress than in the urban region, which is consistent with previous study results where rural

elderlies felt more pain than urban elderlies(17) and urban elderlies had better health conditions than rural elderlies(14).

In terms of study limitations, the study results cannot be generalized because of a lack of representativeness of urban and rural resident elderlies with only 200 subjects in Gwangju and 200 subjects in Jeollanam-do and Jeollabuk-do. This study also targeted only outpatients. In future, subjects and regions shall be expanded while clinic types, hospitalized patients, operation history, and treatment or procedure conducted in clinics will be considered to ensure better quality research.

CONCLUSION

There was a significant difference in the number of physical therapy visits per week between urban and rural areas. The linear regression analysis result showed that factors of significant difference in the number of physical therapy visits per week between urban and rural areas were working hours, whether the subject exercised or not, and pain stress. Therefore, it is necessary to reduce working hours and pain stress experienced by rural elderlies as well as to encourage regular exercise via national polices.

REFERENCES

1. Statistics Korea. Elderly Statistics. 2012. <http://kostat.go.kr>.
2. Statistics Korea. Social survey. 2011. <http://kosis.kr>.
3. Health insurance review & assessment service. Hira Policy Review 5(4). 2011. <http://www.hira.or.kr>.
4. Health insurance review & assessment service. Survey study Data book 1. 2002. <http://www.hira.or.kr>.
5. National health insurance service. National health insurance statistical yearbook. 2012. <http://www.hira.or.kr>.
6. Kim KY. Utilization of Physical Therapy Service and Its Related Factors at the Health Center of a Urban-Rural District. Gwangju, Graduate School of Chonnam University. Master's Thesis 2005: 8-10.

7. Park SY. Satisfaction for The Physical Therapy Service and Physical Therapist in Accordance with The General Characteristics of Patients in Nursing Homes – Focused on Pohang City –. Daegu, The Graduate School of Health Science, Catholic University of Daegu. Master's Thesis 2011; 47–51.
8. Lee YI. Factors Associated with Chronic Pain in Senior Citizens Residing in A Certain District – Focused on The Relationship between Chronic Pain and Stress. Seoul, Graduate School of Public Health Seoul National University. Master's Thesis 2005; 39–41.
9. Lee JD. A Study on the Related Factors of Chronic Pain and Pain Coping among Old adults. Seoul, Graduate school of Education Korea University. Master's Thesis 2006; 10–15, 35–42.
10. Baek YJ. The Validity and Reliability Study on Korean Version of Geriatric Pain Measure. Seoul, Graduate School of Seoul National University. Master's Thesis 2005; 58–60.
11. Lee YJ. After Prescription System, Health Care Delivery System and Equity of Access to Health Services of Rural and Urban. Seoul, Social Welfare Graduate School of Chungang University. Master's Thesis 2002; 9–13.
12. Kim IJ. A comparative study on the factors considered in choosing hospitals of the urban hospital patients and the rural hospital patients. Daegu, Graduate School of Health Care Administration Keimyung University. Master's Thesis 2006; 18–32.
13. Kang JH. A Status of Physical Therapy Demand of The Elderly and The Improvement Suggestions. Seoul, Graduate School of Social Welfare, Myungji University. Master's Thesis 2003; 51–57, 71–73.
14. Kim SJ, The study on physical, mental and social health of the senior citizens : focusing on comparison between those living urban area and rural area. Seosan, The Graduate School of Hanseo University. Master's Thesis 2012; 16–35.
15. Kim KE, A Comparative Study of Health Status in Urban and Rural Elderly – Pusan, Koje Area. Koje College 1998; 6(-): 181–200.
16. Park YH, Home care need of the elderly in a county. Seoul, Graduate School of Seoul National University. Master's Thesis 1994; 23–25. .
17. Ministry of health & welfare. Senior Survey 2008. 2009. <http://www.mw.go.kr>.