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Research article

FACTORS RELATED TO THE USE OF HOME CARE SERVICES BY STROKE PATIENTS UNDER JAPAN'S LONG TERM CARE INSURANCE SYSTEM

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ABSTRACT

Introduction: As the population aged 65 years or older in Japan grows, the number of people who receive long-term care is increasing. Amongst the various disease groups, stroke sufferers are currently the largest group who use home care nursing services. This study explores the factors that affect the insurance system's home care services use rate among stroke patients and their main caregivers in Japan. Aims: This study aims to identify the key factors of stroke patients and that of their main caregivers to determine their relationship with the use situation of home care services under Japan's long-term care insurance system. **Methods**: We enrolled 14 subjects and their caregivers in the Tokai and Kinki regions of Japan. Questionnaires were used for the main caregivers and survey forms were used for home care nursing center personnel. The data were analyzed by univariate analysis. **Results:** Barthel Index (BI) score and the number of higher brain function disorders were found to be relevant to the use rate of long-term care insurance:. As a result of removing an outlier, the rate of number of units for home care increased as the BI score fell. **Conclusions:** Two characteristics of stroke patients were found relevant to the use rate of long-term care insurance: BI score and the number of higher brain function disorders. As a result of removing an outlier, the rate of the number of units for home care nursing increased as the BI score fell.

Keywords: Family Nursing, Home Health Nursing, Home Care Services, Japan, Questionnaires, Stroke

INTRODUCTION

Since the introduction of Japan's long-term care insurance system in 2000, the number of recipients who have received care services under the insurance system has been increasing yearly. There were 4,450,000 recipients as of April 2000, which increased to 1,490,000 by 2012[1]. The care services offered under this system can be classified into three types: home services, facility services, and community-based services. There are approximately 3,280,000 home service users; these users make up the majority of long-term care insurance recipients. They should pay 10% of the cost of those home services.

Japan's long-term care insurance system only provides care services and includes a health care service that encompasses home visits by nurses. Based on disease type, stroke patients make up the majority of certifications for long-term care[2]. It is predicted that the number of elderly people will increase in the future, and how Japan will pay for care services for elderly stroke victims under long-term care insurance is a serious problem.

In 2012, 24.0% of the population was aged 65 years or older. In the long term, it is thought that increases in public funding and premiums cannot be avoided, especially if "user pays" levels remain at their present

amounts.

Necessary medical care and welfare services must continue to be provided even if the financial means become limited, and as a result, the effectiveness of the system becomes the focus. To increase effectiveness, it is necessary to clarify who needs what service and how much it will cost. In this study, to consider greater effectiveness, the focus is on the user who receives home care services after suffering a stroke. Stroke was chosen in this study because it comprises the highest number of long-term care insurance users.

According to a patient survey by the Ministry of Health, Labour and Welfare[2], the most common disease type is hypertensive diseases, with approximately 7,810,000 suffers, second is a malignant neoplasm with 1,420,000, and fifth is cerebrovascular diseases with 1,370,000. Strokes represent 21.5% of main-cause diseases that require care, as reported by the Ministry of Health, Labour and Welfare[3]. Similarly, according to care service facilities in an establishment investigation[4], stroke sufferers represent the largest group at approximately 28% the 68,895 people who use home care nursing services under the long-term care insurance system. Therefore, to ensure an increase in the level of effectiveness, this study analyses the use situation of long-term care insurance by focusing on strokes, which represents the largest user group in the insurance system. Kawate[5]investigated the use situation of stroke patients in Japan's long-term care insurance system, but did not analyse related factors. Furthermore, no studies to date have clarified those factors that relate to the situation of stroke patients under the long-term care insurance system.

However, Oura[6], McCullagh[7], and Franzen-Dahlin[8] did analyze the association between the burden of care and home help services. These studies reported a significant relation between the reduction in the burden of care or the mental burden and the use of such services. McCullagh[7] reported that stroke patients living in their own home who received a low level of home help had higher rates of readmission.

Although these results suggest that use of home care service is concerned with the quality of life (QOL) of the caregiver and caregiver burden, it seems that the use of these social resources is not only influenced by the caregiver's situation but also by that of the stroke patient and any changes in symptoms. Therefore, based on the results of these previous studies, because they do not state whether a home care service is chosen only because of a caregiver's feeling of burden and QOL, it is necessary to analyze the other factors at play.

In this study, to identify the factors related to the use rate of home care services, it is necessary to focus on the relationship between the level of use of home care services and the stroke patient's ADL and the characteristics of the caregiver. Because of the relevance of ADL and the use of home care services can be assumed, it is necessary to analyze the relationship between a patient's ADL and the use of home care services.

A number of studies have analyzed the use of home care services[6,7,11,12], with Oura[6] and McCullagh[7] reporting significant results. Although these studies analyzed the use of various home care services and the number of services, Oura[6] did not analyze the number of use units of long-term care insurance. It is thought that situations of both the patient and caregiver are major factors in the use of home help services. In the present study, variables such as the stroke patient's age, ADL, and higher brain function disorder are analyzed. Previous research has also defined the use of home care services in terms of individual use of these services[6,7,9,11,12,14]. However, in the present study, it is defined as the number of units used in total by all users. This is because this research aims to clarify the characteristics of those people who require a high level of in-home care services by analyzing the actual number of units used. The aim is not to identify the characteristics of people who need individual services. As stated above, this study is limited to that of stroke sufferers because stroke is the condition that receives the most certifications under the long-term care insurance system in Japan. Therefore, the search for the effective supply of insurance services for stroke sufferers has greater significance than for other illnesses.

Study Purpose and Significance: <u>Study purpose:</u>

This study aims to identify the key factors of stroke patients and that of their main caregivers to determine their relationship with the use situation of home care services under Japan's long-term care insurance system.

Significance: By clarifying the relevant factors in the

use of home care services by stroke patients under the long-term care insurance system, the characteristics of caregivers and stroke patients who need more home care services can be identified. The results of this study will assist in policy decisions regarding the selection and use of future home care services. For example, if a specific type of patient and caregiver require more home care services, it is likely that the system needs to be changed to increase the upper limit of service use to ensure people's needs are meet.

METHODS

Subjects: The subjects in this study were patients and their main caregivers living in the Tokai and Kansai areas in Japan. The patients' main diagnosis was stroke. After subjects received their care needs assessment, they received home care services under the long-term care insurance system. All subjects had received the service(s) for at least 3 months. The 3-month (minimum) duration ensures that there is enough time for a care manager to adjust the care to an appropriate care plan to provide the patient and his/her caregiver with home care services.

In this study, the main caregiver refers to the person that spends the longest time in recuperation/care activities at a patient's home.

Investigation facilities: Home care nursing centers (STs) in the Tokai and Kansai areas in Japan.

Investigation method: Questionnaire that were made for this study were distributed to consenting main caregivers of stroke patients that used ST services. The questionnaires were returned via a self-addressed envelope. ST staff completed a survey form. They provided relevant medical information about the level of care need, times units used, and diagnosis. This too was returned via a self-addressed envelope.

Investigation items**:** Caregiver questionnaire: caregiver's age and sex, relationship with stroke patient (e.g., parent, child, sibling), number of other caregivers, and care situation (hours spent providing care and hours of leisure time).

ST personnel survey form: diagnostic name (cerebral infarction, cerebral hemorrhage, subarachnoid bleeding) of stroke, level of care needed, number of use units at the time of investigation, Barthel Index (BI) score (which measures level of ADL), and presence of higher brain function disorders (aphasia, agnosia, apraxia, unilateral spatial neglect, disturbance of attention, memory disorder).

Investigation period: From June 1, 2012 to January 31, 2013

Ethics approval: Approval was obtained from the Ethical Review Board, Aichi Prefectural University. Moreover, the researcher explained the investigation to the ST managers, and then obtained consent. Regarding 14subjects, the content of the investigation was explained to them, and where consent could be obtained, they signed a consent document. The ST personnel survey form referred to individual patients, and thus a list of stroke patients was made for the reference. The list was managed by the ST managers. When the survey ended, the manager destroyed the list.

Analysis: Spearman's rank correlation coefficient was used to clarify the relationship between the rate of the number of use units under the long-term care insurance system (the use rate) and the number of use units of home care nursing (the use rate of home care nursing) and the caregiver's age, stroke patient's age, BI score, and the level of care needed. A Mann-Whitney U test was also performed to determine the relationship between the sex of the caregiver, patient's sex, hours of care time, hours of leisure time, the number of care supporters, and the number of higher brain function disorders. The hours of care time and leisure time and the number of care supporters were divided into two groups (using the median to split the two). The number of higher brain function disorders was divided into two groups: those with fewer than three and those with three or more.

RESULTS

Of the STs that consented to participate in the investigation, one was located in Kansai and four in Tokai. Of the 16 users who agreed to participate, 14 were deemed suitable for the study (refer to Table 1).

Table 1: Number of users at investigation facilities

Visiting nursing station	Number of users*	Number of stroke patients (rate)	Number of person for analysis
1	145	24(16.6%)	4
2	54	21(38.9%)	4
3	39	5(12.8%)	1
4	100	10(10.0%)	2
5	48	8(16.7%)	3
Total	386	68(17.6%)	14

*Number of users was it of results

Table 2: Characteristics of stroke patients(n=14)

Age [median(range)]	73(46～89)
Sex(male/female)	12/2
Stroke type （infarct/ intracerebral hemorrhage/subarachnoid hemorrhage	7/5/2
Level of care need(1/2/3/4/5)*	0/2/2/3/7
Use rate of long term care need† [median（range）]	85.0% (42～110)
Use rate of visting nursing‡ [median（range）]	16.7% (8.3～30)
BI score [median（range）]	35(0～80)
Having highly advanced brain functional disorder or not‖	
Aphasia	7
Agnosia	7
Apraxia	6
Unilateral spacial neglect	6
Attention disorder	8
Defects of memory	7

*Among subjects, there was no person of level of support. †It was calculated by [use number of units of long term care insurance×100/ceiling unit according to level of care need]

‡It was calculated by [use number of units of visiting nursing × 100 / ceiling unit according to level of care need] ‖Multiple responses.

The results for the 14 stroke patients are shown in Table 2. Those for the main caregivers are shown in Table 3. Six people were reported to have three or higher brain function disorders.

Seven patients required the highest level of care, level 5, and none required level 1. Of the seven patients, the median use rate of long-term care insurance was 90.8%, with a range of 78.0%–110.3%. The median use rate of home nursing care was 16.6%, ranging from 8.3% to 21.9%. The median BI score was 10 points, with a range of 0–35 points. There were six patients with more than three higher brain function disorders. The other patient had unilateral spatial neglect and disturbance of attention.

Table 3: Characteristics of main caregivers (n=14)

Age [median (range)]	68(30～87)
Sex(male/female)	2/12
Relationship to stroke patient : Spouse	11
Others (Brother or Sister, Child, Brother-in-law)	3
No. of caregivers other than main caregiver [median(range)]	2(0～4)
Hours spent caring per day: Less than 10	5
More than 10	5
Hours of free per day: Less than 2	8
: More than 2	6

Of the 14 caregivers, 12 were women, and 9 were the spouses of patients. The results of the univariate analysis are shown in Tables 4 and 5. There was no significant relationship between the ages of the caregivers and patients and the use rate of long-term care insurance and the use rate of home care nursing care. There was a significant positive correlation between use rate and level of care needed, and a significant negative correlation between use rate and BI score. No significant relationship was found for any variables and the use rate of home care nursing.

Caregiver’s sex, patient’s sex, number of caregivers, hours of care time, and hours of leisure time had no significant influence on the use rate of long-term care insurance and the use rate of visiting nursing care. The number of higher brain function disorders had a significant influence on the use rate of long-term care insurance. None of the variables had a significant influence on the use rate of home care nursing.

Table 4: Analysis of relationship between use rate of long-term care insurance, use rate of home care nursing and age, level of care need, BI score*

Use situation of long term care insurance / variable	Age of caregiver	Age of stroke patient	Level of care need	BI score
Use rate†	-0.391(p=0.167)	-0.369(p=0.194)	0.646(p=0.013)	-0.623(p=0.017)
Use rate of visiting nursing‡	-0.269(p=0.353)	-0.497(p=0.070)	-0.265(p=0.360)	0.209(p=0.472)

*Significant at the 0.05 level, †use rate=use number of units of long term care insurance × 100/ceiling unit according to level of care need, ‡use rate of visiting nursing=number of units of visiting nursing × 100/ceiling unit according to level of care need

Table 5: Analysis of relationship between use rate of long-term care insurance, rate of home care nursing and sex, number of care supporters, hours of care, hours of leisure, number of highly advanced brain functional disorder*(n=14)

variable/use situation of long term care insurance	Sex	Number	Use rate†	p value	Use rate of visiting nursing‡	p value
Sex of caregiver	Male	2	75.6(61.7～89.5)	0.465	17.6(13.4～21.9)	1.000
	Female	12	87.4(42.9～110.3)		16.7(8.3～30.4)	
Sex of stroke patient	Male	10	81.2(42.9～100.1)	0.304	17.8(8.3～21.9)	0.559
	Female	4	93.3(64.2～110.3)		14.8(0.24～0.31)	
Number of care supporter§	2	7	84.4(42.9～100.1)	0.456	13.4(8.3～30.4)	1.000
	3	7	89.5(64.2～110.3)		18.7(11.8～21.9)	
Hours of care per day‖	<8	5	64.2(42.9～110.3)	0.518	16.2(12.9～30.4)	1.000
	10	9	89.5(61.7～100.1)		16.8(8.3～29.3)	
Hours of leisure per day¶	<2	6	63.0(42.9～110.3)	0.142	14.5(8.3～30.4)	0.592
	2	8	90.2(66.9～100.1)		17.6(11.8～29.3)	
Number of highly advanced brain functional disorder	2	8	65.5(42.9～100.1)	0.029	19.3(8.4～30.4)	0.592
	3	6	93.5(78～110.3)		16.4(8.3～18.7)	

*Significant at the 0.05 level

†use rate=100×number of use units/ceiling unit according to level of care need , median(max～min)　unit：%

‡use rate of visiting nursing = 100×number of use units of visiting nursing/ceiling unit according to level of care need , median(max～min)　unit：%

§The group of caregiver was divided into two except a main caregiver and the groups more than three.

‖The group of caregiver was divided into the one within eight hours and the another where were more than it for ten hours. There was not the person of 8-10 hours. The number of people in a list shows the number of people of the applicable caregiver.

¶The group of caregiver was divided into the one less than two hours and others more than two hours. The number of people in table5 shows the number of people of the applicable caregiver.

DISCUSSION

There was no significant relation between use rates and the age of the caregiver and patient. Thus, these results show a stronger relationship between patients with a decrease in ADL or a higher brain function disorder and the use of long-term care insurance rather than the influence of the age. A number of articles have reported a significant relationship between growing older and a declining ADL[16-18]. The results in the present study can be explained because of the small sample and because the focus was not on possible relationships with ADL; instead, the focus was on the relationship with use rate.

The number of caregivers did not show a significant relationship with use rate in this research; however, Makizako[9] found a significant relationship between the number of care supporters and levels of caregiver burden. Thus, caregiver burden may be reduced where there are more care supporters. Kuwahara[11] explained that caregiver burden may not decrease with more helpers, because the main caregiver may in fact have to give greater attention to all the other caregivers involved. Similar to Kuwahara[11], because the present study includes the care burden of the main caregiver, it is possible that her/his feeling of burden has no relation to the use rate.

Concerning the hours of care and leisure activities, eight caregivers provided care for 12 hours or more per day. Of these subjects, seven had less than 2 hours leisure time. It should be noted that time spent sleeping were not included in this study. Furthermore, there was no significant relationship between the hours engaged in both care and leisure activities and

use rate. Previous studies on hours of care and the burden of care[6,11,13,14,15] reported a significant relationship between the two. The lack of a significant relationship between hours of care and use rate in this study can be explained as follows: even if a caregiver used a home help service, he or she would not leave the patient unattended while they used the bathroom. A significant relationship was found between the use rate of long-term care insurance and the number of higher brain function disorders: the greater the number of higher brain function disorders, more services required. There was no significant relationship with the use rate of home care nursing because the condition of the disease was stable.

Study Limitations and Future Research: As it is difficult to identify the type and amount long-term care insurance services required, future research should investigate care plans. It is also necessary to clarify the relationship between of the existence of a disease and the use of long-term care insurance as it relates to caregivers.

CONCLUSION

Two characteristics of stroke patients were found relevant to the use rate of long-term care insurance: BI score and the number of higher brain function disorders. 2. As a result of removing an outlier, the rate of the number of units for home care nursing increased as the BI score fell.

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Conflict of Interest: Nil

REFERENCES

1. Ministry of Health, Labour and Welfare. The present conditions of long term care insurance system for elderly care and future role. Government of Japan(Online).2013. Available: http://www.mhlw.go.jp/seisakunitsuite/bunya/hukushi_kaigo/kaigokoureisha/gaiyo/dl/hoken.pdf(Accessed 5 May 2014).
2. Ministry of Health, Labour and Welfare. Thegeneralcondition of patient survey. Government of Japan(Online). 2013. Available: http://www.mhlw.go.jp/toukei/saikin/hw/kanja/11 /dl/04.pdf(Accessed 5 May 2014).
3. Ministry of Health, Labour and Welfare. Comprehensive Survey of Living Conditions of the People on Health and Welfare. Government of Japan(Online).2011. Available: http://www.e-stat.go.jp/SG1/estat/List.do?lid=000001083953(Accessed 5 May 2014).
4. Ministry of Health, Labour and Welfare. Survey of Institutions and Establishments for Long-term Care. Government of Japan (Online) .2012. Available: http://www.e-stat.go.jp/SG1/estat/List.do?lid=000001086111(Accessed 5 May 2014).
5. N kawate,M Mizuma. An examination of care services of brain stroke patients in long-term care insurance. Showa University Journal of Medical Sciences.2003; 63(4):437-442.
6. M Oura, M Washio, H Izumi, M Mori. Burden among caregivers of the frail elderly and its correlation with the introduction of a long-term care insurance system for the elderly in fourth year. Nihon Ronen Igakkai Zasshi.2005; 42(4):411-416.
7. McCullagh E, Brigstocke G, Donaldson N, Kalra L. Determinants of caregiving burden and quality of life in caregivers of stroke patients. Stroke.2005;36(10):2181-2186.
8. Franzen-Dahlin A, Larson J, Murray V, Wredling R, Billing E. Predictors of psychological health in spouses of persons affected by stroke.J Clin Nurs.2007;16(5):885-891.
9. H Makizako, T Abe, K Abe, Kobayashi S, Koguchi R, Onuma T, et al. Factors burdening the caregiving relatives of community-dwelling disable Japanese people. Nippon Ronen Igakkai Zasshi.2008; 45(1):59-67.
10. M Nishi, M Izuta, O Sukeno, Y Yoshimi, M Tsuzumi. Factors Affecting the Sense of Caregiver Burden : From the Perspective of ADL. Journal of Kansai University of Welfare Sciences.2011; 15: 93-105.
11. Y Kuwahara, M Washio, Y Arai, H Izumi, M Mori. The Burden felt by family caregivers of frail elderly before and after the introduction of public long term care insurance system in Keichiku District, Fukuoka Prefecture. Natl. Inst. Public Health .2002; 51 (3) :154－167.
12. A Kuroda, N Kanda, N Asai. Health-related quality of life assessed by EuroQo1 in caregivers

of home care stroke patients. Nihon Ronen Igakkai Zasshi.2003;40(4): 381-389
13. Morimoto T, Schreiner AS, Asano H. Caregiver burden and health-related quality of life among Japanese stroke caregivers.Age Ageing.2003;32(2):218-223.
14. Choi-Kwon S, Kim HS, Kwon SU, Kim JS.Factors affecting the burden on caregivers of stroke survivors in South Korea.Arch Phys Med Rehabil.2005;86(5):1043-1048.
15. N Yasuda, S Murata. Caregiver burden related factors of caregivers of frail elderly persons for commuting to rehabilitation institutions. West Kyushu Journal of Rehabilitation Sciences.2011; 4: 59-64.
16. Jongbloed L.Prediction of function after stroke: a critical review. Stroke.1986; 17(4):765-776.
17. H Nakayama, H S Jørgensen, H O Raaschou, Olsen TS. The influence of age on stroke outcome. The Copenhagen Stroke Study. Stroke.1994;25(4):808-813.
18. Kammersgaard LP, Jørgensen HS, Reith J, Nakayama H, Houth JG, Weber UJ, et al. Early infection and prognosis after acute stroke: the Copenhagen Stroke Study. J Stroke Cerebrovasc Dis.2001; 10(5):217-221.
19. Kugler C, Altenhöner T, Lochner P, Hessian Stroke Data Bank Study Group ASH . Does age influence early recovery from ischemic stroke? A study from the Hessian Stroke Data Bank. J Neurol.2003;250(6):676-681.