

Factors Associated with Length of Stay of the Elderly Patient in the Japanese Long Term Care Wards

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Abstract

Japan is famous for its long Length of Stay (LOS) of in-patient services. One of the reasons of this long LOS is the long stay of aged patients. It is estimated that one third of hospitalized aged patient stay in the hospital because of social reasons not by medical needs. In order to clarify the factors associated with longer LOS among the aged patients, we have conducted a patient survey in September 2006. A questionnaire survey has conducted at all long term care hospitals (220 facilities) in Fukuoka in September 2006. All aged patients who had stayed in the institution more than 180 days were investigated. We investigated the background factors of long LOS among the 4,862 hospitalized aged, by the logistic regression analyses. Results showed that female, no care giver at home, existence of dementia, no residence to discharge, no willingness to discharge, were associated with longer length of stay. On the contrary, live alone, higher medical needs, and living in Ariake and Yame-Chikugo regions were associated with shorter length of stay. The present results have suggested the importance of housing policy for the frail elderly in order to solve the longer LOS problem in Japan.

Key words: length of stay, aged, in-patient care, home care, chronic care, housing policy, aged society, Japan

❖ Introduction

According to the OECD statistics, the length of stay (LOS) of Japanese hospital is much longer than that of other countries as shown in Table 1¹⁾. There are several explanations for this phenomenon, i.e., low level of functional differentiation among acute care, middle term care and long term care hospitals, hospitalization due to social reasons such as no care giver at home and shortage of home care services. So far as hospitalization due to social reasons, it is estimated that one

third of hospitalized aged patient stay in the hospital²⁾.

The governmental report has clarified that there are wide regional variations in the per capita health expenditures for the aged³⁾. For example, Fukuoka prefecture (the heaviest medical care using prefecture) shows 1.5 times higher expenditures than Nagano prefecture (the lightest medical care using prefecture). Difference in Length of Stay (LOS) explains this wide regional difference. According to the Health care reform plan 2006, each prefecture government is required to establish a regional health expenditure rationalization plan. For this reason the rationalization of LOS is one of the most important issues for the local government in order to control the health expenditures for the aged.

In order to clarify the factors associated with longer LOS among the aged patients in Fukuoka, we have conducted a patient survey in September 2006. In this

Received: April 6, 2010

Accepted: September 29, 2010

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Table 1 International comparison of Length of stay of acute care hospital

| Country | Length of Stay |
|--------------------------|----------------|
| Japan | 19.2 |
| Germany | 7.9 |
| United Kingdom | 7.5 |
| Canada | 7.3 |
| Italy | 6.7 |
| United States of America | 5.6 |
| France | 5.4 |

Source: OECD Health data 2009.

article, we will present the research results and possible solutions for this problem.

❖ Population and Methods

Population

We have developed a questionnaire and distributed it to all long term care institutions in Fukuoka in September 2006. The number of investigated facilities is 220. All aged patients who had stayed in the hospitals and Long Term Care Insurance (LTCI) institutions were investigated. In each institute, nurses were required to fulfill the questionnaire sheet using information in the medical record and by additional interview, if necessary. The total number of investigated frail aged is 9,834. Among them the aged in-patients more than 65 yr old with sufficient data were included into the analyses in order to investigate factors associated with their LOS (The aged institutionalized in LTCI facilities were excluded from the current analysis). The number of cases for analyses was 4,859. The content of questionnaire is as follows:

- 1) Basic demographical data: age, sex, family status (live alone or not), place of institution (Fukuoka-Itoshima, Kasuya, Munakata, Chikushi, Kurume, Asakura, Yame-Chikugo, Ariake, Iizuka, Nogata-Kurate, Tagawa, Kitakyushu and Kei-chiku ^{Appendix})
- 2) Health and ADL status: Level of medical care needs, Level of ADL care needs, existence of dementia
- 3) Social and psychological factors: existence of care giver, willingness to discharge, willingness of family to care at home, existence of residence for discharge

Statistical analyses

At first, descriptive analyses were employed in order to know the basic characteristics of long LOS aged patients.

Based on the results of descriptive analyses, factors associated with LOS were evaluated by the multiple regression analysis. The model for analysis is as follows:

Dependent variable: LOS (months)

Independent variables: Sex (Male=0, Female=1), Age categories (65–69=1, 70–79=2, 80–89=3, 90–99=4, 100–=5), household situation (live alone=1, others=0), existence of care giver at home (yes=1, no=0), existence of dementia (no dementia=0, dementia=1), ADL level (slight impairment=0, moderate impairment=1, severe impairment =2), Medical care needs (slight=0, moderate=1, heavy=2), existence of residence to discharge (yes=0, no=1), Economic difficulty (No=0, Yes=1), place of residence (Asakura=reference, Dummy variable for Fukuoka-Itoshima, Kasuya, Munakata, Chikushi, Kurume, Yame-Chikugo, Ariake, Iizuka, Nogata-Kurate, Tagawa, Kitakyushu and Kei-chiku; see appendix about the characteristics of each region).

The all data analyses were done by anonymous way. The written consents were obtained from the participants and their family after the explanation of the purpose of research. The study was approved by the Ethical committee of UOEH.

❖ Results

Table 2 shows the descriptive statistics of investigated persons. More than 68 % of investigated person were over 80 yr old. About seventy percent of elderly were females. Twenty percent lived alone and ten percent had no care giver at home. About 90% of them showed some symptoms of dementia. So far as ADL and medical needs level, the aged with lightest level (level 1) was 27.8% for ADL and 43.7% for medical needs. More than 95% of aged wanted to discharge but 26.3% of their families did not want to care at home. It is very important to recognize that 4.7% of them do not have their own residence for discharge. More than 98% did not have economic difficulty. About 40% of hospitals locate at Fukuoka-Itoshima and Kitakyushu areas, that are the two metropolitans of Fukuoka prefectures.

Table 3 shows the results of multiple regression

Table 2 Descriptive statistics of studied population

| Age category | | | <i>Level of medical needs</i> | | |
|-------------------------|-------|-------|--|-------|-------|
| | N | % | | N | % |
| 65–69 | 299 | 6.2 | Medical needs level 1 | 2,124 | 43.7 |
| 70–79 | 1,247 | 25.7 | Medical needs level 2 | 2,341 | 48.2 |
| 80–89 | 2,106 | 43.3 | Medical needs level 3 | 394 | 8.1 |
| 90–99 | 1,151 | 23.7 | Total | 4,859 | 100.0 |
| 100– | 56 | 1.2 | <i>Willingness to discharge</i> | | |
| Total | 4,859 | 100.0 | | N | % |
| Sex | | | Yes | 4,629 | 95.3 |
| | N | % | No | 230 | 4.7 |
| Male | 1,446 | 29.8 | Total | 4,859 | 100.0 |
| Female | 3,413 | 70.2 | <i>Willingness of family to care at home</i> | | |
| Total | 4,859 | 100.0 | | N | % |
| Live alone | | | Yes | 3,580 | 73.7 |
| | N | % | No | 1,279 | 26.3 |
| No | 3,697 | 76.1 | Total | 4,859 | 100.0 |
| Yes | 1,162 | 23.9 | <i>Residence for discharge</i> | | |
| Total | 4,859 | 100.0 | | N | % |
| Existence of care giver | | | Yes | 4,736 | 97.5 |
| | N | % | No | 123 | 2.5 |
| Yes | 4,455 | 91.7 | Total | 4,859 | 100.0 |
| No | 404 | 8.3 | <i>Economic Difficulty</i> | | |
| Total | 4,859 | 100.0 | | N | % |
| Level of dementia | | | No | 4,778 | 98.3 |
| | N | % | Yes | 81 | 1.7 |
| No dementia | 550 | 11.3 | Total | 4,859 | 100.0 |
| I | 433 | 8.9 | <i>Place of institution</i> | | |
| II | 1,022 | 21.0 | | N | % |
| III | 1,441 | 29.7 | Fukuoka-Itoshima | 1,319 | 27.1 |
| IV | 1,061 | 21.8 | Kasuya | 336 | 6.9 |
| M | 352 | 7.2 | Munakata | 111 | 2.3 |
| Total | 4,859 | 100.0 | Chikushi | 221 | 4.5 |
| ADL level | | | Asakura | 238 | 4.9 |
| | N | % | Kurume | 430 | 8.8 |
| ADL level 1 | 1,349 | 27.8 | Ariake | 404 | 8.3 |
| ADL level 2 | 1,659 | 34.1 | Yame-Chikugo | 327 | 6.7 |
| ADL level 3 | 1,851 | 38.1 | Iizuka | 177 | 3.6 |
| Total | 4,859 | 100.0 | Nogata-Kurate | 60 | 1.2 |
| | | | Tagawa | 78 | 1.6 |
| | | | Kitakisyushu | 806 | 16.6 |
| | | | Kei-Chiku | 339 | 7.0 |
| | | | Other areas | 13 | 0.3 |
| | | | Total | 4,859 | 100.0 |

Table 3 Factors associated with length of stay of the institutionalized aged

| | Regression coefficient | | Standardized RC | <i>t</i> | p value |
|--|------------------------|-----|-----------------|----------|---------|
| | B | SE | | | |
| Constant | 39.4 | 5.7 | | 6.953 | 0.000 |
| Age category | 0.0 | 0.1 | -0.004 | -0.285 | 0.776 |
| Sex | 3.3 | 1.1 | 0.045 | 3.058 | 0.002 |
| Live alone | -4.1 | 1.8 | -0.052 | -2.238 | 0.025 |
| Existence of care giver | -2.8 | 0.8 | -0.080 | -3.507 | 0.000 |
| Existence of dementia | 1.7 | 0.4 | 0.070 | 4.073 | 0.000 |
| ADL level | 4.0 | 0.7 | 0.096 | 5.320 | 0.000 |
| Medical care needs | -6.8 | 0.8 | -0.127 | -8.251 | 0.000 |
| Residence to discharge | 19.3 | 3.1 | 0.090 | 6.251 | 0.000 |
| Willingness to discharge | 6.6 | 2.3 | 0.042 | 2.872 | 0.004 |
| Economic difficulty | 6.9 | 3.7 | 0.026 | 1.851 | 0.064 |
| No willingness of family to care at home | -1.6 | 1.1 | -0.021 | -1.416 | 0.157 |
| Dummy for Fukuoka-Itoshima | 2.3 | 2.3 | 0.030 | 1.016 | 0.310 |
| Dummy for Kasuya | 3.4 | 2.7 | 0.026 | 1.231 | 0.218 |
| Dummy for Munakata | 6.0 | 3.8 | 0.027 | 1.598 | 0.110 |
| Dummy for Chikushi | -0.7 | 3.0 | -0.004 | -0.220 | 0.826 |
| Dummy for Kurume | -2.9 | 2.6 | -0.025 | -1.130 | 0.259 |
| Dummy for Ariake | -9.1 | 2.6 | -0.075 | -3.445 | 0.001 |
| Dummy for Yame-Chikugo | 5.9 | 2.7 | 0.044 | 2.143 | 0.032 |
| Dummy for Iizuka | -0.6 | 3.2 | -0.003 | -0.174 | 0.862 |
| Dummy for Nogata-Kurate | 6.0 | 4.7 | 0.020 | 1.292 | 0.196 |
| Dummy for Tagawa | 0.0 | 4.3 | 0.000 | 0.004 | 0.997 |
| Dummy for Kitakyushu | -1.0 | 2.4 | -0.011 | -0.410 | 0.682 |
| Dummy for Kei-Chiku | -5.2 | 2.7 | -0.040 | -1.911 | 0.056 |

Dependent variable: Length of stay (in months)

Independent variables:

Sex (Male=0, Female=1), Age categories (65–69=1, 70–79=2, 80–89=3, 90–99=4, 100–=5), household situation (Live alone =1, Others =0), existence of care giver at home (Yes=1, No=0), existence of dementia (No dementia=0, Dementia=1), ADL level (Slight impairment=0, Moderate impairment=1, Severe impairment=2), Medical care needs (Slight=0, Moderate=1, Heavy=2), existence of residence to discharge (Yes=0, No=1), Economic difficulty (No=0, Yes=1), place of institution (Asakura=reference, Dummy variable for Fukuoka-Itoshima, Kasuya, Munakata, Chikushi, Kurume, Yame-Chikugo, Ariake, Iizuka, Nogata-Kurate, Tagawa, Kitakyushu and Kei-Chiku).

analyses. Factors associated with longer LOS are female, prevalence of dementia, lower ADL independence level, no residence for discharge, and no willingness to discharge. On the contrary, live alone, higher medical needs, existence of caregivers at home and institution at Ariake and Yame-Chikugo associated with shorter length of stay.

❖ Discussion

In 2006 the average life expectancies are 82.1 for female and 79.3 for male in Japan³. This means the Japanese aged society is characterized by the female

aged who must live alone. This is the most important reason why female would stay longer in hospitals, even though their health and ADL conditions are not so severe. In rural areas such as Ariake and Yame-Chikugo regions, the extended family is still dominant. Thus aged people in these regions might have care givers at home. This may explain the reason of relatively shorter LOS among the aged living at Ariake and Yame-Chikugo regions.

The present study showed that the aged with higher medical needs had a shorter LOS. They are possibly transferred to the acute or sub-acute wards when their medical needs become higher. As the

chronic care wards under the medical insurance are paid by per diem scheme, it is reasonable for the chronic care wards to transfer these patients to acute and sub-acute care wards in order to avoid the deficit. This explains why persons with higher medical needs showed a shorter LOS.

According to the research results of Ministry of Health, Labour and Welfare (MHLW), there was 1.5 times difference in the per-person medical expenditures for the aged among the 47 prefectures and most of this difference could be explained by the difference in the length of stay at medical wards³⁾. In order to solve this problem, the MHLW has launched the 2006 Health Care Reform Plan in which they put much importance on the development of home care³⁾. The MHLW has clarified their will to reduce the number of long term care beds by transferring these facilities into nursing homes and assisted livings. However, under the actual situation, most of the users do not welcome such a program, because it will transfer the financial, psychological and physical burden to the aged and their family members. In order to solve this problem, it is absolutely necessary to assure the comfort and safety at home.

Our previous research has clarified that the aged living in the houses with necessity of reconstruction have showed more willingness to use institutional services that are covered by the public medical insurance and LTCI⁴⁾. Hayakawa reported that many aged people in the lower socio-economic class were obliged to live in old and narrow-spaced houses⁵⁾. He also reported that the aged peoples were often denied to borrow a house because of their age and health problems. This is one of the reasons why the Japanese aged prefer to stay in hospital even though the medical problem does not require it.

It must be heard in mind that this situation has been partly caused by the poor housing policy of our country. In most of the developed countries, such as UK and France, the development of residence has been organized as a part of social security policy. On the contrary, the Japanese government has long depended on the private initiative for the construction of residence. Traditionally the preparation of residence for workers and their family was an important

fringe benefit of welfare services organized by each company. Furthermore, workers were recommended to do saving in order to construct their own house. The company prepared a variety of supportive services, such as a saving account with higher interest rate and a special loan with low interest rate. During this historical process, the public housing had characteristics of “temporary residence” and inhabitants were expected to quit the public housing after they become afford to obtain their own private residence. Thus most of the public housing have not paid enough attention to the vulnerable groups such as the aged and handicapped.

The above explanation indicated that the Japanese poor housing policy for the vulnerable groups is one of the most important reasons for inappropriate hospitalization due to social reasons. In fact, no residence for discharge was detected as a statistically significant variable for longer LOS in the present study. In order to rationalize the expenditures for medical and ADL care services and at the same time to ameliorate the quality of life of frail aged, the government is required to implement the appropriate housing program for the frail elderly. As Hayakawa has indicated⁵⁾, the healthy housing is a fundamental of public health policy. Without appropriate housing policy, it will be impossible to develop a quality home care system and to rationalize the health expenditures.

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Appendix

About Fukuoka prefecture

Japan composes of 47 prefectures, each of which is an independent local government with its own administrative office and Diet. Fukuoka prefecture is located at the west tip of Japan. The total population

is about five million, the ninth largest prefecture of Japan. The climate is an oceanic type with four distinct seasons. There are 66 local communities (cities, towns and villages) in Fukuoka. These communities are grouped into 13 health care regions (Figure 1). There are wide differences in population structures as shown in Table 4.

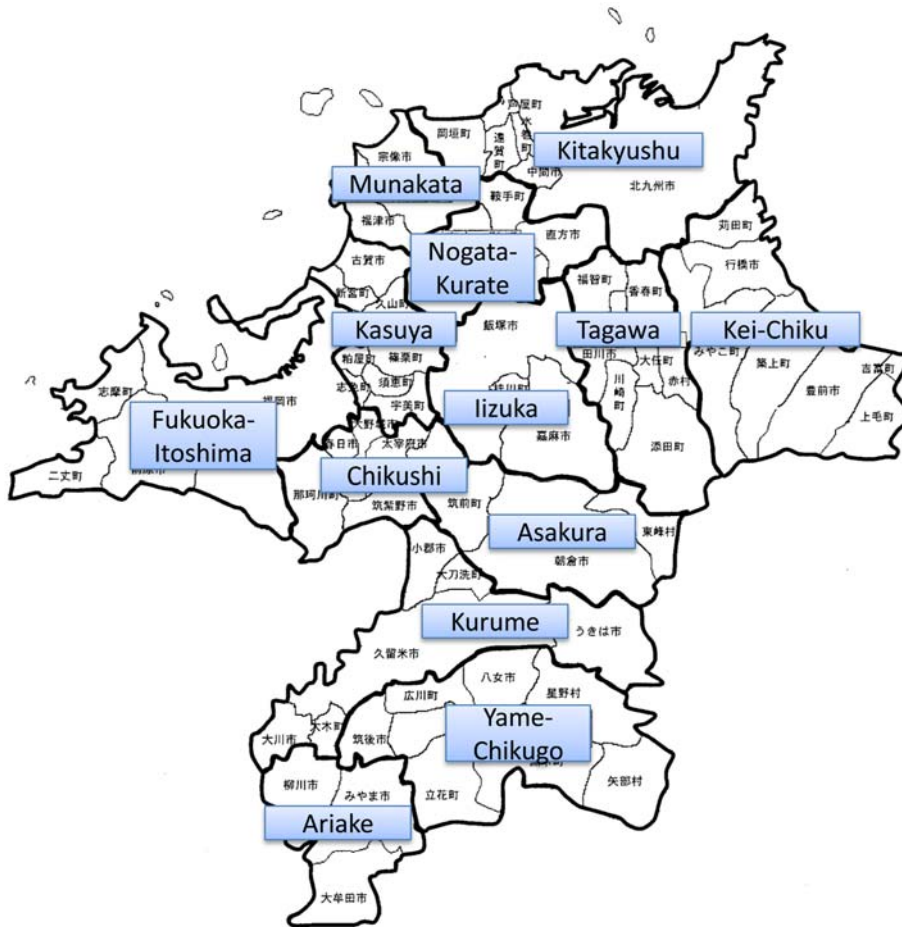


Figure 1 Health care regions of Fukuoka

Table 4 Population structure of 13 health care regions in Fukuoka (2006)

| | Fukuoka-Itoshima | Kasuya | Munakata | Chikushi | Asakura | Kurume | Yame-Chikugo |
|-------|---------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|
| 0–14 | 202,938 13.7% | 41,163 15.8% | 20,249 13.5% | 66,751 16.3% | 12,887 14.1% | 69,412 15.0% | 20,660 14.6% |
| 15–64 | 1,047,888 70.7% | 178,178 68.3% | 99,019 66.1% | 281,843 68.7% | 56,195 61.5% | 299,285 64.6% | 86,135 61.0% |
| 65– | 231,807 15.6% | 41,692 16.0% | 30,512 20.4% | 61,597 15.0% | 22,347 24.4% | 94,715 20.4% | 34,442 24.4% |
| Total | 1,482,633 100.0% | 261,033 100.0% | 149,780 100.0% | 410,191 100.0% | 91,429 100.0% | 463,412 100.0% | 141,237 100.0% |

| | Ariake | Iizuka | Nogata-Kurate | Tagawa | Kitakyushu | Kei-Chiku |
|-------|-------------------|-------------------|-------------------|-------------------|---------------------|-------------------|
| 0–14 | 31,706 12.8% | 24,992 12.9% | 14,326 12.4% | 18,438 13.2% | 150,944 13.3% | 26,729 14.0% |
| 15–64 | 150,036 60.4% | 122,153 63.1% | 71,007 61.5% | 84,040 60.0% | 731,157 64.3% | 119,674 62.5% |
| 65– | 66,813 26.9% | 46,531 24.0% | 30,092 26.1% | 37,550 26.8% | 254,634 22.4% | 45,066 23.5% |
| Total | 248,555 100.0% | 193,676 100.0% | 115,425 100.0% | 140,028 100.0% | 1,136,735 100.0% | 191,469 100.0% |

Source: Fukuoka prefecture, http://www.pref.fukuoka.lg.jp/uploaded/life/24/24630_3168200_misc.pdf.