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Secular change in the use of home-based services by the frail elderly and the care burden of family caregivers —A comparison between 2002 and 2008 in Sapporo, Japan—

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ABSTRACT

Purpose: The Long-Term Care Insurance System was established to promote socialized care in Japan and has addressed the challenge of decreasing the care burden of caregivers by using social services. The aims of the present study were to compare the following between 2002 and 2008: (a) the use of home-based services by the frail elderly living at home and (b) the care burden of family caregivers.

Method: We mailed self-administered questionnaires to family caregivers of the frail elderly who received home-based care from home visit nursing stations in Sapporo City between May and July 2002 and in October 2008. We analyzed 70 and 71 valid responses obtained in 2002 and 2008, respectively.

The questionnaire queried characteristics of family caregivers and the frail elderly, the caregiving situation, use of social services, care burden, and activities of daily living of the frail elderly. Each variable was compared between responses obtained in 2002 and those obtained in 2008.

Results: The comparison of responses obtained in 2002 and 2008 did not show significant differences either in family caregivers' characteristics or the use of social services. The proportion of the frail elderly with behavioral and psychological symptoms of dementia was significantly greater in 2002 than in 2008 (2002: 27, 38.6% vs. 2008: 13, 18.3%; $p < 0.01$). In terms of the care situation, the time spent on physical caregiving was longer in 2008 than in 2002 (2002: 8.1 ± 6.4 h vs. 2008: 5.0 ± 5.4 h; $p < 0.01$).

Conclusion: The time that family caregivers spent on physical caregiving increased from 2002 to 2008. Therefore, it is important to promote the use of social services and change the role norms of family care.

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Key words: Care burden, Frail elderly, Family caregiver, Long-Term Care Insurance System, Home-based services

1. Introduction

The population of Japan is aging at an all-time high rate. In 2010, it was estimated that the number of elderly individuals requiring nursing care would reach 3.9 million.¹⁾ Allowing elderly individuals who require nursing care to live at home is an important social challenge in aging societies. Care services in Japan transitioned from a countermeasures system to a contract system because of the start of the Long-Term Care Insurance System (LTCIS) in April 2000. This change enabled elderly individuals requiring nursing care to freely select public services according to the level of care they require. Nonetheless, a

large part of home-based care depends on the cooperation of family caregivers apart from public services. Because of the declining birth rate and an aging population, the proportion of households comprising three generations as well as the number of people per household are decreasing.²⁾ Family structure and functions that form the basis of home-based care and long-term care also seem to have weakened.²⁾ Accordingly, weakened family structure and functions may place a large burden on families caring for the frail elderly.

Several factors pertaining to the frail elderly and their caregivers are associated with care burden. For the

frail elderly, a decrease in the capacity for activities of daily living (ADL) and an increase in the behavioral and psychological symptoms of dementia (BPSDs) reportedly increase the care burden.^{3, 4)} For the caregiver, anxiety, depression, and mental fatigue are associated with care burden.^{5, 6)} Furthermore, there is a fear that caregivers experience deterioration in their physical health and a shorter lifespan.⁷⁾ Therefore, it is important to decrease the burden of family caregivers in order to continue the system of home-based care. The use of public services and social support networks can decrease care burden.^{8, 9)} In contrast, some reports have claimed that care burden has not changed since LTCIS was introduced.^{10, 11)}

In April 2006, a system with an emphasis on “preventing the elderly from reaching the condition requiring care” was established, and LTCIS was reformed to build a system in which the necessary services are provided according to the needs of elderly individuals requiring care.¹²⁾ Therefore, it is necessary to investigate whether the individuals requiring care, the use of social services, and the care burden of family caregivers have changed after the introduction and reformation of LTCIS.

The aims of the present study were to compare the following between 2002 and 2008: (a) the use of home-based services by the frail elderly living at home and (b) the care burden of family caregivers.

2. Methods

2.1 Subjects and data collection

We conducted a study to compare the care burden between 2002 and 2008. The year 2002 was only two years after the year 2000 when LTCIS was introduced. The year 2008 was just two years after the year 2006 when LTCIS was reformed.

The subjects were family caregivers for individuals receiving home-based care from home visit nursing stations (2002: 5 locations, 2008: 7 locations) in Sapporo City, the capital of Hokkaido Prefecture, Northern Japan. Among the 83 and 86 caregivers who agreed to participate in the study in 2002 and 2008, data from 70 and 71 valid responses, respectively, were included in our analysis.

The participants completed self-administered questionnaires between May and July 2002 or in October 2008. Visiting nurses distributed the questionnaires to the participants, who then returned the completed questionnaires by mail. Visiting nurses also filled out a questionnaire regarding the situation of the frail elderly who were receiving care from family caregivers. The visiting nurses returned the questionnaires by mail in

batches from the visiting nursing stations.

2.2 Content of data collected

The self-administered questionnaire examined the caregiver and frail elderly individual's age and gender, caregiver's employment status, the history of the present illness, the relationship of the caregiver with the frail elderly, presence of a co-operator, duration of the caregiving, time spent on physical caregiving, the copayment in the long-term insurance system, care burden of the caregiver, and the use of social services. Social services are classified into the following: a) home visit care (home help services), b) home visit bath services, c) day services/commuting to a rehabilitation services (day care), d) short-stay services and e) meal delivery services. The care burden of the family caregiver was assessed using the Japanese version of the Zarit Caregiver Burden Interview (J-ZBI),^{13, 14)} which is a scale comprising 22 items that are evaluated on an 88-point scale.

The questionnaire items regarding the frail elderly pertained to ADL, the presence or absence of dementia, and BPSDs. The Barthel Index,¹⁵⁾ which is scored on a 100-point scale, was used to assess ADL. A higher score indicates higher capacity for ADL, and a score of ≥ 60 indicates a lower amount of required assistance. For the frail elderly, the Dementia Behavior Disturbance Scale developed by Baumgarten et al.¹⁶⁾ was used to assess BPSDs. A diagnosis of dementia was obtained either from medical records or according to the BPSDs of the frail elderly.

2.3 Analysis

The number of questionnaires responded were 83 in 2002 and 86 in 2008. The collection ratio was 68.0% in 2002, however, it could not be calculated in 2008 because the exact number of distributed questionnaires was unknown. Among the responses, 70 and 71 were valid in 2002 and 2008, respectively, and were subjected to the analysis.

The *t*-test, chi-squared test, and Fisher's exact test were used to compare the responses obtained in 2002 and 2008. In addition, the subjects were subdivided according to their J-ZBI score into either a heavy-burden group (the first tertile: ≥ 41 points) or a light-to-medium-burden group (the second and third tertiles: ≤ 40 points).

The statistical software SPSS Statistics ver. 20 for Windows (IBM) was used to perform statistical analyses. A *p* value of less than 5% was considered as statistically significant.

Table 1 Comparison between 2002 and 2008: characteristics of caregivers and frail elderly.

				(%)
		2002	2008	<i>p</i> -value
		n=70	n=71	
Caregivers' characteristics				
Gender	Males	21 (30.0)	20 (28.2)	0.81
	Females	49 (70.0)	51 (71.8)	
Age (year old) ¹	Mean±SD	64.6±13.0	65.7±11.6	0.61 [#]
Had a Job	Yes	13 (18.6)	10 (14.1)	0.47
	No	57 (81.4)	61 (85.9)	
History of the present illness	Yes	45 (64.3)	40 (56.3)	0.34
	No	25 (35.7)	31 (43.7)	
Relationships of the caregiver with the frail elderly	Partners	35 (50.0)	35 (49.3)	0.93
	Non-partners	35 (50.0)	36 (50.7)	
Family member helped with caregiving	Yes	34 (48.6)	28 (39.4)	0.28
	No	36 (51.4)	43 (60.6)	
Frail elderly's characteristics				
Gender	Males	22 (31.4)	31 (43.7)	0.13
	Females	48 (68.6)	40 (56.3)	
Age (year old)	Mean±SD	80.5±8.6	81.1±8.1	0.69 [#]
Barthel Index	≥ 59	35 (50.0)	27 (38.0)	0.15
	≤ 60	35 (50.0)	44 (62.0)	
Dementia	Yes	48 (68.6)	53 (74.6)	0.42
	No	22 (31.4)	18 (25.4)	
Behavioral and psychological symptoms of dementia	Some	27 (38.6)	13 (18.3)	< 0.01
	None	43 (61.4)	58 (81.7)	

Chi-square test #t-test

¹2002: n=70 2008: n=69

2.4 Ethical considerations

In the document requesting consent to participate in the research, we specified the research purpose, and stated that personal information would be protected, and that returning the questionnaire would indicate consent to participate. We also obtained consent from the frail elderly or family caregivers to obtain situational assessments of the frail elderly by visiting nurses. The Ethics Committee of Sapporo Medical University approved both surveys.

3. Results

3.1 Comparison of the attributes of the caregivers and the frail elderly

Table 1 shows the characteristics of the caregivers and the frail elderly. There were no significant differences in the comparisons of caregivers' characteristics between 2002 and 2008, including gender, age, and employment status. Among characteristics of the frail elderly, the proportion of subjects who responded that BPSDs was sometimes observed was larger in 2002 than in 2008 [2002: 27 (38.6%) vs. 2008: 13 (18.3%), $p < 0.01$].

3.2 Comparison of the caregiving situation

In terms of the caregiving situation, the time spent on physical caregiving was longer in 2008 than in 2002 (8.1 ± 6.4 h vs. 5.0 ± 5.4 h; $p < 0.01$) (Table 2). The care burden was not significantly different between 2002 and 2008 [2002: 29 (41.4%) vs. 2008: 20 (28.2%); $p = 0.10$].

3.3 Comparison of the use of home-based services

The proportions of the subjects using home help services [2002: 35 (50.7%) vs. 2008: 25 (35.2%); $p = 0.06$], day care or day rehabilitation services [2002: 39 (56.5%) vs. 2008: 31 (43.7%); $p = 0.13$], and short-stay services [2002: 19 (27.5%) vs. 2008: 14 (19.7%); $p = 0.28$] were not significantly different between 2002 and 2008 (Table 3).

4. Discussion

The time that family caregivers spent on physical caregiving increased from 2002 to 2008 (Table 2). The proportion of caregivers who spend more than half a day providing care was especially large among primary caregivers of individuals in serious need of care,¹⁷⁾ thus raising concerns about the increase in their physical burden. A randomized controlled trial revealed that performing

Table 2 Comparison between 2002 and 2008: care setting (%)

Care setting		2002 n=70	2008 n=71	p-value
Duration of caregiving (months) ¹	mean±SD	50.8±42.6	55.7±45.9	0.52 [#]
Time spend on physical caregiving (hours/day) ²	mean±SD	5.0±5.4	8.1±6.4	< 0.01 [#]
Time attending the elderly (hours/day) ³	mean±SD	9.1±8.6	9.1±7.6	0.97 [#]
Able to go out without accompanying the elderly ¹	No	20 (28.6)	15 (21.7)	0.35
	Yes	50 (71.4)	54 (78.3)	
Able to pay of the long-term care service costs (months) ⁴	< 10,000 Yen	20 (30.8)	26 (37.7)	0.40
	≥ 10,000 Yen	45 (69.2)	43 (62.3)	
Worrying about what others think of them when the frail elderly use the services ⁵	No	62 (91.2)	57 (81.4)	0.10
	Yes	6 (8.8)	13 (18.6)	
J-ZBI score	≤ 40	41 (58.6)	51 (71.8)	0.10
	≥ 41	29 (41.4)	20 (28.2)	

Chi-square test #t-test

¹2002: n=70 2008: n=69 ²2002: n=64 2008: n=66 ³2002: n=62 2008: n=60⁴2002: n=65 2008: n=69 ⁵2002: n=68 2008: n=70**Table 3** Comparison between 2002 and 2008: the use of social services (%)

Social service		2002 n=69	2008 n=71	p-value
Home visit care (Home help services)	Use	35 (50.7)	25 (35.2)	0.06
	No use	34 (49.3)	46 (64.8)	
Home visit bath services	Use	26 (37.7)	24 (33.8)	0.63
	No use	43 (62.3)	47 (66.2)	
Commuting to a care services (Day service) or Commuting to a rehabilitation services (Day care)	Use	39 (56.5)	31 (43.7)	0.13
	No use	30 (43.5)	40 (56.3)	
Short-stay services	Use	19 (27.5)	14 (19.7)	0.28
	No use	50 (72.5)	57 (80.3)	
Meal delivery services	Use	4 (5.8)	5 (7.0)	1.00 [#]
	No use	65 (94.2)	66 (93.0)	

Chi-square test #: Fisher's exact test

interventions for caregivers, such as pressure ulcer prevention, nutritional guidance, instructions on walking assistance, on and communication, and assistance with transfers can decrease the care burden of the caregivers.^{18, 19)} Offering this kind of support to caregivers may allow the frail elderly to continue living at home. In addition, it is important to promote the use of social services and to change the role norms of family care.

In 2002, BPSDs were seen in 38.6% of the frail elderly (Table 1). When the frail elderly present with BPSDs, their family caregivers must monitor them constantly, this situation increases the care burden.²⁰⁾ Therefore, treatment of BPSDs may decrease the care burden of family caregivers. Some reports have claimed that BPSDs in the frail elderly can be alleviated and that the care burden of family caregivers is decreased via home

visit rehabilitation.²¹⁾ Heavy care burden may be linked to interruption of home-based care. Continuation of home-based care for the frail elderly is possible with a team approach where various professionals cooperate; this notion suggests that interventions that are designed to prevent institutionalization deserve more attention.

The use of home-based services among the frail elderly living at home indicated no significant difference between 2002 and 2008 (Table 3). According to one report, the proportion of individuals unable to use social services increased as the economic situation worsened.²²⁾ Reimbursement of the cost may influence the use of social services. It is predicted that the cost of LTCIS will increase with the growth of the population of the frail elderly.¹²⁾ Helping the frail elderly to use the necessary services should decrease the care burden of family caregivers and

enable the frail elderly to continue living at home. Thus, the system is likely to be improved cost reimbursement with consideration to the income and level of care needed.

The limitation of this study is that we did not analyze the same group in both years. The local home-based services available to the patients receiving home-based care and to their families vary by region. Accordingly, the results of the present study were limited to one city. In future, surveys across a larger region as well as longitudinal surveys should be conducted.

5. Conclusion

Our comparison between survey responses obtained in 2002 and 2008 did not show any statistically significant changes in the use of social services from 2002 to 2008. The time that family caregivers spent on physical caregiving increased in 2008 from 2002. For decreasing the care burden of family caregivers in the future, it is important to promote the use of social services and change the role norms of family care.

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要介護高齢者の在宅サービス利用状況と 家族介護者の介護負担感

—札幌市における 2002 年と 2008 年の比較—

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目的：我が国では介護の社会化を推進するために介護保険制度が創設され、サービスの利用により介護者の介護負担感を軽減することが課題とされてきた。本研究の目的は、在宅要介護高齢者の在宅サービス利用状況と家族介護者の介護負担感を 2002 年と 2008 年とで比較することとである。

方法：北海道 A 市で訪問看護ステーションを利用している在宅療養者の家族介護者を対象に自己記入式質問紙調査を 2002 年 5～7 月と 2008 年 10 月に郵送法により実施した。有効回答の得られた 70 組 (2002 年) と 71 組 (2008 年) を分析対象とした。

質問紙の内容は、療養者および介護者の年齢・性、介護者の続柄、介護状況、サービス利用、介護負担感、日

常生活動作等とした。各変数について 2002 年と 2008 年で比較をした。

結果：2002 年と 2008 年の比較では、家族介護者の特性およびサービス利用は有意差を認めなかった。2008 年に比べて 2002 年のほうが要介護高齢者の特性で認知症の行動・心理症状が時々見られると回答した割合が多かった (2002 : 27 (38.6%) vs. 2008 : 13 (18.3%), $p < 0.01$)。

介護状況で、直接介護の時間は 2002 年よりも 2008 年のほうが長かった (5.0 ± 5.4 時間 vs. 8.1 ± 6.4 時間, $p < 0.01$)。

結論：2002 年よりも 2008 年のほうが直接介護の時間が増加していた。今後、サービス利用の促進と家族介護という役割規範を変えていくことの重要性が示唆された。