

Intensive rehabilitation reduced BPSD

Table 1 Demographic data

		Intervention	Control	
<i>n</i>		158	54	
Male/female (%)		30.2/69.8	39.6/60.4	NS
Age		84.1 ± 7.1	87.3 ± 7.1	P = 0.005†
Dementia	AD	22	7	NS
	VD	52	15	NS
	DLB	3	0	NS
	FTD	2	0	NS
	Others/unknown	79	32	NS

†Significant difference by two-sample *t*-test. AD, Alzheimer's disease; DLB, dementia with Lewy bodies; FTD, front-temporal dementia; M/F, male/female; NS, no significant difference by χ^2 -test; VD, vascular dementia.

difficult to collect many data if the assessment were complicated. The assessment scales were chosen based on preliminary studies, which were carried out in the last 2 years.

Cognitive tests

The MMSE and HDS-R were carried out. HDS-R is similar to MMSE, but lays more weight on memory than does MMSE.

Questionnaires

For the assessment of subjective mood, the participants were required to answer the interview of a short version of the Geriatric Depression Scale (GDS;¹⁰ scores are between 0–5, high scores indicate more depressive mood). Facility care staff assessed activities of daily living (ADL), BPSD, N-Memory Scale (NM),¹¹ vitality index¹² and the Social Activity Scale. ADL was assessed using the Barthel Index (scoring was changed: total assistance of 0 to independence of 3 for each item, and full score of 15).¹³ In addition to ADL, the capacity for social interaction was measured using the Social Activity Scale, whose sub-items were conversation with facility staff members, conversation with other residents, organizing own belongings, participation in recreational activities, and outings (total assistance of 0 to independence of 3 for each item, and full score of 15). BPSD was evaluated using a short version of the Dementia Behavior Disturbance Scale (DBD;¹³ “never” of 0 to “usually” of 3 for each item and full score of 48).¹⁴ The NM Scale is an observational scale, which evaluates the stages of dementia in five domains: housework, social interaction and interest, communication, memory, and orientation (“impossible” of 0 to “normal” of 10 and full score of 50). The Vitality Index evaluates motivation in daily living, with sub-items of waking up, greetings, having meals, elimination, and participation in rehabilitation and/or recreation (“indifferent” of 0 to “voluntarily” of 2 and full score of 10).

Intervention

Before commencement of the study, a training workshop was held to introduce the intervention methods, whose efficacy was suggested by previous studies: such as reminiscence, reality orientation, memory rehabilitation, music therapy, physical exercise, occupational therapy, speech communication therapy and learning sessions.

The intervention was carried out in an individualized tailor-made manner.¹⁵ First, the individual functional profiles were assessed with regard to both abilities and disabilities to evaluate how to enhance the abilities and compensate for disabilities. Second, training activities were selected; the decision was shared between therapists and participants. Each personal session was took place three times a week for 3 months after admission by physical, occupational or speech therapists. Individuals in the control group took usual group therapies including exercise, singing songs and games.

Analysis of data

The data were analyzed using the Japanese version of SPSS for Windows version 19.0 (IBM Corporation, Armonk, NY, USA). For an initial baseline comparison between the intervention and control groups, two-sample *t*-tests were carried out; there was no significant difference between the two groups for any outcome measure. Participants who underwent the initial baseline and post-intervention assessments were included in the final analysis; dropout participants were excluded from the analysis. Repeated measures analysis of covariance (ANCOVA) with the covariate of age was used to analyze the completed cases. Age was used as a covariate, because the ages were significantly different between the two groups (Table 1). The interaction was examined to assess the differential effect between the intervention and control groups, and post-hoc “within subjects” analysis was carried out with Bonferroni correction. Regarding the measures where significant

interaction was shown, intention-to-treat analysis was also carried out; the participants who received the intervention but did not claim Long-Term Care Insurance for three consecutive months were included in the intention-to-treat analysis. A significant difference was set as $P < 0.05$.

Results

Demographic data of the participants are shown in Table 1. Analysis of 158 participants in the intervention group and 54 in the control group was carried out (Fig. 1). The number of participants who took donepezil during the intervention/observation period was two in both groups ($P = 0.269$, χ^2 -test).

Cognitive tests

Participants in the intervention group showed significant improvement in HDS-R score compared with those in the control group (interaction $F[1, 196] = 5.190$, $P = 0.024$; post-hoc intra-subject analysis: intervention group, $P = 0.001$, control group $P = 0.480$). There were no significant differences observed in MMSE (Table 2).

Questionnaire

The intervention group showed significant improvement compared with the control group in DBD¹³ ($F[1,197] = 4.506$, $P = 0.035$; post-hoc intra-subject analysis: intervention group, $P = 0.004$, control group $P = 0.413$) and NM Scale ($F[1,198] = 9.550$, $P = 0.002$; post-hoc intra-subject analysis: intervention group, $P < 0.001$, control group $P = 0.380$). Regarding the sub-items of the NM Scale, significant differences in interaction were observed for social interaction ($F[1,198] = 15.736$, $P < 0.001$), memory ($F[1,198] = 7.635$, $P = 0.006$) and orientation ($F[1,198] = 4.220$, $P = 0.041$).

Although the interaction was not significant, comparison between pre- and post-intervention showed significant improvement in ADL (Barthel Index), Social Activity Scale, motivation (Vitality Index) and mood (GDS) only in the intervention group after multiple correction (Table 2).

Intention-to-treat analysis

Significant differences remained in the intention-to-treat analysis in the HDS-R and NM Scale; HDS-R, interaction ($F[1, 230] = 4.466$, $P = 0.036$), post-hoc analysis within subjects: intervention group $P < 0.001$, control group $P = 0.585$; NM Scale, interaction ($F[1, 236] = 8.113$, $P = 0.005$), post-hoc analysis: intervention

	Intervention group		Control group		Interaction F (DF)	P	Intra-subject [†]	
	Pre mean ± SD	Post mean ± SD	Pre mean ± SD	Post mean ± SD			Intervention	Control
Cognitive test								
MMSE	19.1 ± 4.5	19.4 ± 5.5	19.5 ± 4.9	18.2 ± 7.4	1.780 (1,110)	0.185	0.542	0.234
HDS-R	16.9 ± 5.7	17.9 ± 6.5	17.0 ± 5.9	16.7 ± 6.3	5.190 (1,196)	0.024*	0.001**	0.480
Questionnaire								
NM	30.4 ± 9.1	32.1 ± 9.5	31.4 ± 9.8	30.7 ± 10.9	9.550 (1,198)	0.002**	$P < 0.001$ ***	0.380
ADL	16.4 ± 7.1	17.3 ± 7.1	15.7 ± 7.0	15.9 ± 6.9	1.448 (1,202)	0.230	0.001**	0.621
Activity	8.6 ± 3.3	8.8 ± 3.4	8.5 ± 3.1	8.6 ± 3.2	1.169 (1,200)	0.281	0.038*	0.972
Vitality	8.0 ± 1.7	8.2 ± 1.6	8.1 ± 1.8	8.2 ± 1.8	1.792 (1,199)	0.182	0.004**	0.864
DBD	4.5 ± 5.1	4.0 ± 4.1	4.5 ± 4.2	4.8 ± 4.7	4.506 (1,197)	0.035*	0.004**	0.413
GDS	2.5 ± 1.8	2.4 ± 1.9	2.3 ± 1.5	2.4 ± 1.5	2.048 (1,196)	0.154	0.042*	0.634

[†]Intra-subject: post-hoc analysis of intra-subject (comparison between pre- and post-intervention analysis) * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. Activity, Original Activity Scale; ADL, Activities of daily living; DBD, Dementia Behavior Disturbance Scale; DF, degree of freedom; GDS, Geriatric Depression Scale; HDS-R, Hasegawa Dementia Scale revised; MMSE, Mini-Mental State Examination; NM, N-Memory Scale; Post, post-intervention assessment; Pre, pre-intervention assessment; Vitality, Vitality Index.

Table 2

Intensive rehabilitation reduced BPSD

group $P < 0.001$, control group $P = 0.410$. The interaction of DBD was marginal; interaction ($F[1, 232] = 3.717, P = 0.055$), post-hoc analysis: intervention group $P = 0.007$, control group $P = 0.439$.

Discussion

Significant improvement by the intervention was shown in multiple domains; therefore, the intensive rehabilitation for dementia was beneficial for the individuals with dementia and also their caregivers. Pharmacological effects were thought to be negligible, as just two participants in both groups took donepezil during the intervention/observation period.

Regarding cognitive function, the effects of intensive rehabilitation for dementia were shown in both a cognitive test and observational evaluation of memory and orientation measured by NM Scale. In the symptomatic treatment of dementia, amelioration in daily living rather than in neuropsychological factors should be the therapeutic objectives, and thus the emphasis would be laid on improving performance in everyday life rather than on scores of cognitive tests.¹⁶ Besides, it is often pointed out that scores of cognitive tests cannot always be generalized to daily living, although cognitive tests are moderately predictive of functional status in everyday life.¹⁷ Therefore, mere enhancement of cognitive test scores is not sufficient, and beneficial changes in daily living are required. In the present study, cognitive improvement was shown in observational evaluation, in addition to a cognitive test. Cognitive enhancement is also beneficial for caregivers, because the severity of cognitive impairment could be a predictor of burden, in addition to BPSD.^{18,19} The effects of non-pharmacological approaches on cognitive function have not yet been established,^{16,19} and the present study could provide additional evidence for their benefit.

Amelioration of BPSD was also attained in the present study. Care for demented individuals requires allocation of longer times than for care of the elderly suffering from physical diseases. In particular, the presence of BPSD might induce more stress than do medical problems,^{4,20-23} and could result in depression or strain in caregivers.²⁴ Consequently, caregivers' burden is associated with an increased risk of institutionalization.²⁵ However, institutionalization could not solve caregivers' distress; a year after institutionalization, distress still persisted in caregivers.²⁶ In contrast, treatment of BPSD could help diminish caregiver burden.²⁷ Thus, it is beneficial both for individuals with dementia and their caregivers to reduce BPSD by rehabilitation in intermediate facilities between hospital and home.

In addition to enhancement of cognitive function and reduction of BPSD, improvement of social functioning and quality of life (QOL) should be the main outcomes of rehabilitation for dementia.¹⁶

Social isolation is associated with increased risk of mental decline,²⁸ whereas a rich social network and interaction might protect against mental decline.^{29,30} In demented individuals, symptoms of depression were a consistent predictor of QOL.³¹ In the present study, the intervention group showed improvement of social functioning measured by the Social Activity Scale, and amelioration of depressive mood measured by GDS.

Regarding the intervention, individualized tailor-made therapies were carried out, because the aim of the present study was to enhance each participant's ability to meet their individual needs, and not to show the efficacy of any specific method. Personally-relevant goals were identified, and the therapist worked with the individuals with dementia to devise strategies to cope with difficulties in their everyday lives by building on the person's strengths and developing ways of compensating for impairment.¹⁵ Personal selection was considered an essential therapeutic element to enhance the motivation and optimize the emotional impact of the training. Changing and combining methods were allowed during the intervention period.

The present study showed that intensive rehabilitation should be beneficial for both individuals with dementia and caregivers. To promote community-based care and dehospitalization, continuity of rehabilitation is desirable to maintain function after returning home; another mission of Roken is to offer community-based rehabilitation and various care services to support home-based care.

As a limitation, the participants were not randomized. By data cleaning, data including missing values were excluded so that the numbers of valid data were different among assessments. Finally, for evaluation of the effects on dehospitalization, a longitudinal follow-up study is required.

Acknowledgment

This study is partially supported by a Grant-in-Aid from the Ministry of Health Labor and Welfare (#19 Health Promotion Projects for Elderly-169 2-Na).

Disclosure statement

The authors declare no conflict of interest.

References

- 1 Zekry D, Herrmann FR, Grandjean R *et al*. Does dementia predict adverse hospitalization outcomes? A prospective study in aged inpatients. *Int J Geriatr Psychiatry* 2009; **24**: 283-291.
- 2 Andrieu S, Reynish E, Nourhashemi F *et al*. Predictive factors of acute hospitalization in 134 patients with Alzheimer's disease: a one year prospective study. *Int J Geriatr Psychiatry* 2002; **17**: 422-426.

K Toba *et al.*

- 3 Cerejeira J, Lagarto L, Mukaetova-Ladinska EB. Behavioral and psychological symptoms of dementia. *Front Neurol* 2012; **3**: 73.
- 4 Matsumoto N, Ikeda M, Fukuhara R *et al.* Caregiver burden associated with behavioral and psychological symptoms of dementia in elderly people in the local community. *Dement Geriatr Cogn Disord* 2007; **23**: 219–224.
- 5 Kobayashi T, Kato S. Depression-dementia medius: between depression and the manifestation of dementia symptoms. *Psychogeriatrics* 2011; **11**: 177–182.
- 6 Vilalta-Franch J, Calvo-Perxas L, Garre-Olmo J, Turro-Garriga O, Lopez-Pousa S. Apathy syndrome in Alzheimer's disease epidemiology: prevalence, incidence, persistence, and risk and mortality factors. *J Alzheimers Dis* 2012; **33**: 535–543.
- 7 Bjoerke-Bertheussen J, Ehrt U, Rongve A, Ballard C, Aarsland D. Neuropsychiatric symptoms in mild dementia with lewy bodies and Alzheimer's disease. *Dement Geriatr Cogn Disord* 2012; **34**: 1–6.
- 8 Quaranta D, Marra C, Rossi C, Gainotti G, Masullo C. Different apathy profile in behavioral variant of frontotemporal dementia and Alzheimer's disease: a preliminary investigation. *Curr Gerontol Geriatr Res* 2012; **2012**: 719250.
- 9 Xing Y, Wei C, Chu C *et al.* Stage-specific gender differences in cognitive and neuropsychiatric manifestations of vascular dementia. *Am J Alzheimers Dis Other Demen* 2012; **27**: 433–438.
- 10 Yesavage JA, Brink TL, Rose TL. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res* 1982; **17**: 37–49.
- 11 Kobayashi T, Hariguchi S, Nishimura K *et al.* A new clinical scale for rating of mental states and activities of daily living of the elderly (NM scale and N-ADL). *Jpn J Clin Psychiatry* 1988; **17**: 1653–1668. (In Japanese.)
- 12 Toba K, Nakai R, Akishita M *et al.* Vitality Index as a useful tool to assess elderly with dementia. *Geriatr Gerontol Int* 2002; **2**: 23–29.
- 13 Mahoney FI, Barthel DW. Functional evaluation: the Barthel index. *Md State Med J* 1965; **14**: 61–65.
- 14 Machida A. Estimation of the reliability and validity of the short form version of the 28-item Dementia Behavior Disturbance scale. *Nippon Ronen Igakkai Zasshi* 2012; **49**: 463–467. (In Japanese, abstract English.)
- 15 Lam LC, Lui VW, Luk DN *et al.* Effectiveness of an individualized functional training program on affective disturbances and functional skills in mild and moderate dementia—a randomized control trial. *Int J Geriatr Psychiatry* 2010; **25**: 133–141.
- 16 Woods B, Aguirre E, Spector AE, Orrell M. Cognitive stimulation to improve cognitive functioning in people with dementia. *Cochrane Database Syst Rev* 2012; (2)CD005562.
- 17 Farias ST, Harrell E, Neumann C, Houtz A. The relationship between neuropsychological performance and daily functioning in individuals with Alzheimer's disease: ecological validity of neuropsychological tests. *Arch Clin Neuropsychol* 2003; **18**: 655–672.
- 18 Germain S, Adam S, Olivier C *et al.* Does cognitive impairment influence burden in caregivers of patients with Alzheimer's disease? *J Alzheimers Dis* 2009; **17**: 105–114.
- 19 Aguirre E, Woods RT, Spector A, Orrell M. Cognitive stimulation for dementia: a systematic review of the evidence of effectiveness from randomised controlled trials. *Ageing Res Rev* 2012; **12**: 253–262.
- 20 Black W, Almeida OP. A systematic review of the association between the Behavioral and Psychological Symptoms of Dementia and burden of care. *Int Psychogeriatr* 2004; **16**: 295–315.
- 21 Miyamoto Y, Tachimori H, Ito H. Formal caregiver burden in dementia: impact of behavioral and psychological symptoms of dementia and activities of daily living. *Geriatr Nurs* 2010; **31**: 246–253.
- 22 Marvardi M, Mattioli P, Spazzafumo L *et al.* The Caregiver Burden Inventory in evaluating the burden of caregivers of elderly demented patients: results from a multicenter study. *Ageing Clin Exp Res* 2005; **17**: 46–53.
- 23 Campbell P, Wright J, Oyeboode J *et al.* Determinants of burden in those who care for someone with dementia. *Int J Geriatr Psychiatry* 2008; **23**: 1078–1085.
- 24 Molyneux GJ, McCarthy GM, McEniff S, Cryan M, Conroy RM. Prevalence and predictors of carer burden and depression in carers of patients referred to an old age psychiatric service. *Int Psychogeriatr* 2008; **20**: 1193–1202.
- 25 Yaffe K, Fox P, Newcomer R *et al.* Patient and caregiver characteristics and nursing home placement in patients with dementia. *JAMA* 2002; **287**: 2090–2097.
- 26 Elnstahl S, Ingvad B, Annerstedt L. Family caregiving in dementia: prediction of caregiver burden 12 months after relocation to group-living care. *Int Psychogeriatr* 1998; **10**: 127–146.
- 27 Gitlin LN, Winter L, Dennis MP *et al.* Targeting and managing behavioral symptoms in individuals with dementia: a randomized trial of a nonpharmacological intervention. *J Am Geriatr Soc* 2010; **58**: 1465–1474.
- 28 Bassuk SS, Glass TA, Berkman LF. Social disengagement and incident cognitive decline in community-dwelling elderly persons. *Ann Intern Med* 1999; **131**: 165–173.
- 29 Fratiglioni L, Wang HX, Ericsson K, Maytan M, Winblad B. Influence of social network on occurrence of dementia: a community-based longitudinal study. *Lancet* 2000; **355**: 1315–1319.
- 30 Wang HX, Karp A, Winblad B, Fratiglioni L. Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: a longitudinal study from the Kungsholmen project. *Am J Epidemiol* 2002; **155**: 1081–1087.
- 31 Naglie G, Hogan DB, Krahn M *et al.* Predictors of patient self-ratings of quality of life in Alzheimer disease: cross-sectional results from the Canadian Alzheimer's Disease Quality of Life Study. *Am J Geriatr Psychiatry* 2011; **19**: 881–890.

AUTHOR QUERY FORM

Dear Author,

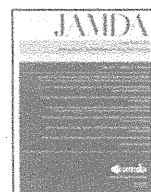
During the preparation of your manuscript for publication, the questions listed below have arisen. Please attend to these matters and return this form with your proof.

Many thanks for your assistance.

Query References	Query	Remarks
1	AUTHOR: Please supply a Table heading for Table 2.	



JAMDA

journal homepage: www.jamda.com

Original Study

Priorities of Health Care Outcomes for the Elderly

Masahiro Akishita MD, PhD^{a,*}, Shinya Ishii MD^a, Taro Kojima MD^a, Koichi Kozaki MD, PhD^b, Masafumi Kuzuya MD, PhD^c, Hidenori Arai MD, PhD^d, Hiroyuki Arai MD, PhD^e, Masato Eto MD, PhD^a, Ryutaro Takahashi MD, PhD^f, Hidetoshi Endo MD, PhD^g, Shigeo Horie MD, PhD^h, Kazuhiko Ezawa MD, PhDⁱ, Shuji Kawai MD, PhDⁱ, Yozo Takehisa MD, PhD^j, Hiroshi Mikami MD, PhD^k, Shogo Takegawa MSSc^l, Akira Morita BPS^m, Minoru Kamata DMEⁿ, Yasuyoshi Ouchi MD, PhD^a, Kenji Toba MD, PhD^g

^a Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

^b Department of Geriatric Medicine, Kyorin University School of Medicine, Mitaka, Japan

^c Department of Geriatric Medicine, Nagoya University Graduate School of Medicine, Nagoya, Japan

^d Department of Human Health Sciences, Kyoto University Graduate School of Medicine, Kyoto, Japan

^e Department of Geriatric Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan

^f Tokyo Metropolitan Geriatric Hospital and Institute of Gerontology, Tokyo, Japan

^g National Center for Geriatrics and Gerontology, Obu, Japan

^h Department of Urology, Teikyo University School of Medicine, Tokyo, Japan

ⁱ Japan Association of Geriatric Health Services Facilities, Tokyo, Japan

^j Japan Association of Medical and Care Facilities, Tokyo, Japan

^k Japan Medical Association, Tokyo, Japan

^l Graduate School of Humanities and Sociology, The University of Tokyo, Tokyo, Japan

^m Faculty of Law, Gakushuin University, Tokyo, Japan

ⁿ Institute of Gerontology, The University of Tokyo, Tokyo, Japan

A B S T R A C T

Keyword:

Geriatrics
quality of care
health care policy

Objectives: Physicians are uncertain about what medical services should be provided to older and/or disabled patients. Better understanding of health outcome prioritization among health care providers and recipients may help the process of decision- and policy-making. For this purpose, surveys were conducted on priorities of health care outcomes for the elderly.

Design: Survey research.

Setting: Four groups of health care providers and four groups of health care recipients.

Participants: A total of 2512 health care providers and 4277 recipients.

Measurements: Questionnaires were sent to more than 8000 health care providers and more than 9000 health care recipients: geriatricians, physicians who commonly see older patients or work in long term care facilities, staff members and participants in adult day care, patients in outpatient geriatric clinics, family members of patients with dementia, and community-dwelling older adults. The questionnaire asked the subjects to rank 12 measures of health care outcomes.

Results: The mean response rate was 49%. All health care provider groups considered "improvement of quality of life" the most important. In contrast, in health care recipient groups, "effective treatment of illness," "improvement of physical function," and "reduction of carer burden" were given high priority, whereas "improvement of quality of life" was perceived as less important. All the groups, including health care providers and recipients, ranked "reduction of mortality" the least important, followed by "avoiding institutional care." Stratification analysis showed that the results did not differ by sex, nursing care level, or the existence of relatives who required nursing care, whereas age slightly influenced the order of high-ranked measures.

This study was supported by a Health and Labor Sciences Research Grant (H22-Choju-Shitei-009) from the Ministry of Health, Labor, and Welfare of Japan.

* Address correspondence to Masahiro Akishita, MD, PhD, Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo; 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan.

E-mail address: akishita-tky@umin.ac.jp (M. Akishita).

1525-8610/\$ - see front matter Copyright © 2013 - American Medical Directors Association, Inc.
<http://dx.doi.org/10.1016/j.jamda.2013.01.009>

Conclusion: Priorities of health care services and their differences between providers and recipients should be taken into account in the health care of older patients and the design of health care policies and research.
Copyright © 2013 - American Medical Directors Association, Inc.

Japanese society has been rapidly aging owing to long life expectancy and a low birth rate.¹ People older than 65 comprised 23.8% of the population in 2012, which is expected to rise to 31.8% in 2030² and will be by far the highest in the world. Japanese physicians have been exposed to a high load of older patients, and management of older patients remains a major challenge. There are several reasons for this difficulty. Evidence is still largely lacking for older patients, especially for those older than 75 years, who account for 11.8% of the Japanese population.^{2,3} Older patients are likely to have multimorbidities, or co-occurrence of two or more chronic conditions,⁴ but application of disease-specific guidelines to older patients with multimorbidities may result in polypharmacy, an increased risk of adverse drug reactions, and poor outcomes.^{5,6} At the same time, however, older patients are at increased risk of underuse of necessary medication, for fear of polypharmacy or complications.^{7,8}

In an attempt to help optimize prescribing for older patients, investigators have devised numerous tools to guide clinicians, such as lists of indicated, beneficial medication or medication with high potential for harm.^{9,10} Although these tools are helpful in reducing exposure of older patients to inappropriate medication and risk of adverse drug events,¹¹ they do not provide more general considerations, such as when or how to discontinue potentially inappropriate medications, how to balance risks and benefits of unlisted medication, or how to manage medication in special circumstances, such as palliative and hospice care where symptom control is of higher priority. Therefore, the process of determining the medication regimen is inevitably subjective and individualized, taking into account patients' cognitive, physical, and social function, remaining life expectancy, and the goals of care.

Unfortunately, few studies have examined the priorities of health care perceived by health care providers and recipients in geriatric medicine. One small study conducted in England more than 15 years ago showed that geriatricians and patients similarly gave high priority to reducing disability and improving quality of care, and low priority to reducing mortality.¹² However, the serious question of whether there may be a gap in priorities of health care between health care providers and recipients has been raised.^{13,14}

Better understanding of health outcome prioritization among health care providers and recipients in geriatric medicine is necessary

to help physicians, older patients, and their family members discuss the goals of care and to assist health policy makers in effectively using resources to address the needs of older patients. In this study, we aimed to obtain a comprehensive picture of the views of groups with an important stake in geriatric health care services (geriatricians, physicians who commonly see older patients or work in long term care facilities, staff members and participants in adult day care, patients in outpatient geriatric clinics, family members of patients with dementia, and community-dwelling older adults) on the relative priorities of different outcome measures that are relevant to geriatric clinical practice and health care policy.

Methods

Between September 2010 and October 2011, surveys were conducted in the following eight groups:

- (1) All geriatricians (approximately 1500) board certified by the Japan Geriatrics Society
- (2) A total of 5000 physicians randomly selected from the list of board-certified physicians in five subspecialties (two internal medicine subspecialties, two surgical subspecialties, and one other) with high exposure to older patients
- (3) Physicians working in 800 long term care facilities that were randomly chosen from the nationwide list of long term care facilities
- (4) Staff members working in adult day care at 400 randomly chosen long term care facilities as mentioned previously
- (5) Participants in adult day care at the same 400 long term care facilities as mentioned previously
- (6) Patients in geriatric outpatient clinics at five university teaching hospitals (the University of Tokyo, Kyorin University, Nagoya University, Kyoto University, and Tohoku University)
- (7) Family members of patients with dementia who had been seen in geriatric outpatient clinics at four university teaching hospitals (Tohoku University was excluded because of the Tohoku Earthquake at the time of this survey)
- (8) A total of 6000 community-dwelling, functionally independent (ie, not requiring nursing care provided by long term care

Table 1
Survey Methods and Number of Valid Answers in 8 Groups

Groups	Time of Survey	Survey Methods	No. of Questionnaires Sent	No. (%) of Valid Answers*
Health care providers				
Geriatricians	2010, Sep	By post	1500	619 (41)
Physicians in 5 subspecialties	2011, Oct	By post	5000	1305 (26)
Physicians in long term care facilities	2011, Oct	By post	800	384 (48)
Adult day care staff	2010, Sep	By post for each facility	400 facilities (2 per facility)	204†
Health care recipients				
Adult day care participants	2010, Sep	By post for each facility	400 facilities (5–10 per facility)	795†
Patients in geriatric outpatient clinics	2010, Sep	Distributed by physicians and returned by post	950	512 (55)
Family members of patients with dementia	2011, Oct	Distributed by physicians and returned by post	542	333 (61)
Community-dwelling older adults	2010, Sep	By post	6000	2637 (44)

*Responses with missing items or invalid answers were excluded.

†For adult day care staff members and participants, questionnaires were sent to each facility by post, where 2 staff members and 5 to 10 participants were offered the questionnaire; 123 facilities (31%) returned the completed questionnaires.

insurance) older adults randomly drawn from the community registers of two target areas (Kashiwa, Chiba Prefecture, a city close to Tokyo, and Sabae, Fukui Prefecture, a provincial city), from which men and women, 65 to 74 years and older than 75 years, were equally selected

Postal questionnaires were sent to all groups of physicians and community-dwelling old adults. For adult day care staff members and participants, questionnaires were sent to each facility, where two staff members and 5 to 10 participants were offered the questionnaire, to be completed on a voluntary basis. The completed questionnaires were gathered at each facility and then returned to us. Patients and family members of patients with dementia received the questionnaires from their physicians (Table 1).

The questionnaire asked about the relative priorities of 12 health care measures that were derived from a literature review and a previous Internet-based survey conducted by the National Center for Geriatrics and Gerontology in 2009 (in Japanese; <http://www.ncgg.go.jp/pdf/itaku/21hokoku/20si-3.pdf>). Each item was expressed as several words so as to help health care recipients understand the meaning. The respondents were asked to rank the measures in order of priority from 1 (most importance) to 12 (least important). To facilitate ranking the outcomes in order, they were prompted to choose and rank the three most important outcomes, then the three least important outcomes, and last, the six middle outcomes. Ties, or the same ranks, were not allowed.

To examine whether variation in the question wording could affect the results, we devised another version of the questionnaire with different wording for four items and sent that version to a randomly selected subset of participants; however, the results were almost identical (data not shown). We also tested whether the order of health care measures that appeared in the questionnaire would affect the results in a random subset of participants, but the responses to the reverse order questionnaire were similar to those of the original version (data not shown). Therefore, we analyzed the responses from different versions (wording and order) together.

The following information was also collected using the questionnaire: age and sex for all participants; specialty (internal medicine, surgery, psychiatry, or others) and years of experience for physicians; qualification and years of experience for adult day care staff; nursing care level (level of required nursing care: relatively independent, limited impairment, needing extensive help, or severely dependent) for adult day care participants; nursing care level and the existence of relatives who required nursing care for patients in geriatric outpatient clinics; nursing care level, morbid conditions, and the existence of relatives who required nursing care for community-dwelling older adults.

The study protocol was approved by the Ethics Committee of the Graduate School of Medicine, The University of Tokyo. Ethical approval for the surveys on patients in geriatric outpatient clinics and family members of patients with dementia was also obtained from the participating institutions.

Results

The mean response rate for the eight groups was 49%, which varied from 28% for board-certified physicians to 68% for family members of patients with dementia (Table 1). The analytic sample included a total of 2512 health care providers and 4277 recipients.

Tables 2 and 3 show the relative priorities of 12 measures of health care services from the highest importance to the lowest, with mean and 95% CI, perceived by health care providers and recipients, respectively.

All physician groups considered "improvement of quality of life" the most important, and the low mean value for this item across physician

Table 2
Health Care Providers' Priorities for Health Care Outcome

Rank Order	Geriatricians (n = 619)			Physicians from 5 Relevant Subspecialties (n = 1305)			Physicians in Long Term Care Facilities (n = 384)			Adult Day Care Staff (n = 204)		
	Outcome	Mean	95% CI	Outcome	Mean	95% CI	Outcome	Mean	95% CI	Outcome	Mean	95% CI
1	Improvement of quality of life	2.62	2.45–2.80	Improvement of quality of life	3.09	2.96–3.22	Improvement of quality of life	2.88	2.62–3.14	Improvement of quality of life	4.29	3.88–4.71
2	Patient satisfaction with care	4.37	4.15–4.58	Patient satisfaction with care	4.34	4.19–4.49	Patient satisfaction with care	4.60	4.32–4.88	Maintaining a high level of activity	4.35	3.96–4.73
3	Effective treatment of illness	4.80	4.53–5.07	Maintaining a high level of activity	4.64	4.48–4.80	Improvement of physical function	4.68	4.39–4.97	Reduction of carer burden	4.80	4.42–5.17
4	Maintaining a high level of activity	4.92	4.69–5.15	Improvement of physical function	5.25	5.08–5.42	Maintaining a high level of activity	4.73	4.43–5.03	Resolution of assessed problems	5.15	4.74–5.55
5	Improvement of physical function	4.94	4.71–5.18	Effective treatment of illness	5.32	5.13–5.52	Improvement of mental health	5.50	5.29–5.71	Improvement of mental health	5.26	4.86–5.65
6	Improvement of mental health	6.04	5.87–6.20	Reduction of carer burden	5.93	5.79–6.07	Resolution of assessed problems	5.77	5.51–6.04	Patient satisfaction with care	5.43	5.03–5.83
7	Resolution of assessed problems	6.39	6.17–6.61	Resolution of assessed problems	6.12	5.97–6.27	Reduction of carer burden	6.10	5.84–6.37	Improvement of physical function	5.83	5.42–6.25
8	Reduction of carer burden	6.45	6.27–6.64	Improvement of mental health	6.39	6.26–6.52	Effective treatment of illness	6.22	5.87–6.57	Improvement of social functioning	7.17	6.79–7.55
9	Efficient use of resources	7.83	7.67–8.00	Efficient use of resources	7.50	7.37–7.62	Efficient use of resources	8.15	7.95–8.35	Effective treatment of illness	7.41	6.95–7.87
10	Improvement of social functioning	8.80	8.62–8.98	Improvement of social functioning	8.69	8.56–8.82	Improvement of social functioning	8.20	7.95–8.44	Efficient use of resources	7.43	7.04–7.81
11	Avoiding institutional care	10.28	10.15–10.42	Avoiding institutional care	10.24	10.14–10.34	Avoiding institutional care	10.31	10.13–10.50	Avoiding institutional care	9.97	9.71–10.23
12	Reduction of mortality	10.56	10.37–10.76	Reduction of mortality	10.49	10.36–10.62	Reduction of mortality	10.85	10.67–11.04	Reduction of mortality	10.92	10.66–11.17

CI, confidence interval.

Table 3
Health Care Recipients' Priorities for Health Care Outcome

Rank Order	Community-Dwelling Older Adults (n = 2637)		Family Members of Patients With Dementia (n = 333)		Patients in Geriatric Outpatient Clinics (n = 512)		Adult Day Care Participants (n = 795)	
	Outcome	Mean 95% CI	Outcome	Mean 95% CI	Outcome	Mean 95% CI	Outcome	Mean 95% CI
1	Effective treatment of illness	4.23 4.11–4.36	Effective treatment of illness	3.04 2.76–3.32	Effective treatment of illness	2.79 2.58–3.00	Improvement of physical function	3.64 3.42–3.86
2	Reduction of carer burden	4.56 4.44–4.67	Improvement of physical function	4.49 4.19–4.78	Improvement of physical function	4.06 3.84–4.29	Effective treatment of illness	4.33 4.11–4.55
3	Improvement of physical function	5.24 5.13–5.36	Maintaining high level of activity	5.11 4.76–5.45	Improvement of quality of life	5.46 5.19–5.73	Reduction of carer burden	5.40 5.18–5.63
4	Maintaining high level of activity	5.88 5.76–5.99	Reduction of carer burden	5.29 4.98–5.61	Reduction of carer burden	5.52 5.28–5.77	Improvement of quality of life	6.08 5.86–6.30
5	Resolution of assessed problems	5.91 5.76–6.05	Improvement of mental health	5.53 5.24–5.82	Improvement of mental health	5.81 5.58–6.04	Maintaining high level of activity	6.12 5.88–6.37
6	Improvement of mental health	6.26 6.15–6.36	Improvement of quality of life	5.80 5.48–6.13	Maintaining high level of activity	5.97 5.66–6.28	Improvement of mental health	6.38 6.17–6.58
7	Improvement of quality of life	6.36 6.23–6.49	Resolution of assessed problems	5.98 5.69–6.27	Resolution of assessed problems	6.17 5.93–6.42	Patient satisfaction with care	6.44 6.24–6.64
8	Patient satisfaction with care	6.81 6.70–6.92	Patient satisfaction with care	6.01 5.70–6.31	Patient satisfaction with care	6.72 6.47–6.96	Resolution of assessed problems	6.45 6.26–6.65
9	Efficient use of resources	6.91 6.81–7.02	Efficient use of resources	7.49 7.21–7.76	Efficient use of resources	7.46 7.24–7.69	Efficient use of resources	6.57 6.36–6.77
10	Improvement of social functioning	7.44 7.32–7.56	Improvement of social functioning	9.17 8.90–9.45	Improvement of social functioning	8.42 8.18–8.65	Improvement of social functioning	8.22 8.03–8.42
11	Avoiding institutional care	8.43 8.31–8.56	Avoiding institutional care	9.86 9.60–10.12	Avoiding institutional care	9.39 9.16–9.62	Avoiding institutional care	8.61 8.41–8.81
12	Reduction of mortality	9.98 9.87–10.08	Reduction of mortality	10.23 9.99–10.48	Reduction of mortality	10.22 10.00–10.44	Reduction of mortality	9.75 9.55–9.95

CI, confidence interval.

groups indicated physicians' strong preference for this item. All the physician groups also considered "patient satisfaction," "maintaining a high level of activity," and "improvement of physical function" important after "improvement of quality of life," with some variation in the order of their preferences. Geriatricians ranked "effective treatment of illness" the third most important, in contrast to the other two physician groups that ranked this item lower. Adult day care staff ranked "improvement of quality of life" and "maintaining a high level of activity" first and second, respectively, but placed "reduction of carer burden" the third most important, unlike physicians.

With regard to the receiving side of health care, "effective treatment of illness," "improvement of physical function," and "reduction of carer burden" were given high priority, whereas "improvement of quality of life" tended to be perceived as less important.

All the groups, including both health care providers and recipients, ranked "reduction of mortality" the least important, followed by "avoiding institutional care," "improvement of social functioning," and "efficient use of resources," except for the adult day care staff who ranked "improvement of social functioning" higher than "effective treatment of illness."

Stratification analysis demonstrated that the results from physicians were not influenced by sex (male vs female, data not shown); however, physicians older than 60 years tended to rank "effective treatment of illness" and "improvement of physical function" higher compared with younger physicians, who appeared to prioritize "patient satisfaction" and "maintaining a high level of activity." Physicians with more than 30 years' experience, most of whom were older than 60 years, showed a similar tendency, prioritizing "effective treatment of illness" and "improvement of physical function." The results from adult day care staff were identical across groups stratified by age, years of experience, and qualification (data not shown).

The results from the health care recipients did not differ by nursing care level (relatively independent vs limited impairment or higher, or limited impairment vs needing extensive help or higher) for adult day care participants and patients in geriatric outpatient clinics, the existence of relatives who required nursing care (present vs absent) for patients in geriatric outpatient clinics, study site for patients in geriatric outpatient clinics and community-dwelling older adults, or sex for all health care recipient groups (data not shown). Although stratification by age showed that the three measures given highest priority were the same across the age groups (65 to 74 vs older than 75) in community-dwelling older adults, the younger group ranked "reduction of carer burden" first, whereas the older group ranked "effective treatment of illness" first (data not shown).

Discussion

This study is, to our knowledge, the largest survey ever conducted to describe health outcome prioritization in geriatric medicine. We aimed to obtain a comprehensive picture of the views of those involved in decision-making processes in geriatric medicine and compare views between health care providers and recipients. We chose four groups each from providers and recipients that are considered relevant to our purpose. The mean response rate was close to 50%, which was good for a large-scale postal survey and ensured the representative nature of our respondents.

This survey demonstrated that there may be an important gap in health outcome prioritization between health care providers and recipients in geriatric medicine. All health care provider groups, notably physicians, expressed a strong preference for improvement in quality of life (QOL) as a priority of care, whereas health care recipients gave the highest priority to effective treatment of diseases and tended to put lower importance on QOL. In the context of clinical medicine, QOL is often used as a nonspecific, all-encompassing term to describe

nonmortality outcomes averaged over multiple domains (ie, physical, social, and psychological functioning and well-being). Consideration of QOL is essential for the selection of a treatment option, particularly when conditions are noncurative and chronic.¹⁵ Therefore, it is not surprising that physicians who regularly see older patients with multiple chronic conditions consider QOL the most important health care outcome. On the other hand, the term QOL may not be familiar to many health care recipients, and we cannot exclude the possibility that QOL might be confused with other terms, such as standard of living.

Most health care recipients ranked effective treatment of diseases as the most important, suggesting that patients are concerned about their own particular symptoms rather than nonspecific QOL, arguing for efforts to examine the symptoms most concerning to patients. The high importance of effective treatment of diseases ascribed by health care recipients, but not physicians, also implies the significance of the often-neglected aspect of inappropriate prescribing in older adults: underuse of medication likely to be beneficial to older adults. Increased evidence has suggested that failure to prescribe indicated, beneficial medication is common in older adults,^{7,8,16} and recent attempts to provide an explicit list of appropriate, indicated medication for older adults are justified.¹⁰

Interestingly, views on patient satisfaction were also different. All physician groups ranked patient satisfaction as the second top priority, whereas health care recipients considered this to be less important. This tendency has been demonstrated in a prior small study in England more than 15 years ago.¹² Recently, patient satisfaction has been increasingly used to measure health care qualities and compare health plans or physicians.¹⁷ However, our finding may argue against the value of patient satisfaction as a performance measure in geriatric medicine, especially in light of recent evidence suggesting that higher patient satisfaction is accomplished at the sacrifice of increased use of health care resources and may not be directly associated with technical quality of care or improved outcome.^{17,18}

We observed agreement on several items between health care providers and recipients. The importance of physical and mental function, such as maintaining activity or improving physical function, was expressed by both health care providers and recipients. This finding was consistent with prior studies in older adults with multiple chronic conditions^{12,19} or terminal conditions,^{20,21} suggesting that physical and mental function should be an essential factor to consider as a health care outcome in various care settings for older patients.

Reduction in mortality was given the lowest priority by all the groups in health care providers and recipients alike. This view is similar to that observed in previous studies.^{12,19} This finding supports the contention that treatment interventions should be assessed in terms of reduced morbidity and improved QOL in addition to reduced mortality.

In this survey, respondents' characteristics, except age, had limited influence on their views on health outcome prioritization within each group. Geriatricians older than 60 years and community-dwelling adults older than 75 years gave higher priority to effective treatment of diseases compared with their younger counterparts. This suggests that health outcome priorities may not be stable, and can change as respondents age or differ from generation to generation. The cross-sectional design of our survey prevented us from separating the age effect from the secular trend, and further studies will be required to examine the time- or setting-dependent variability of health outcome prioritization.

This study has several limitations. First, although the average response rate was high for a postal survey, it was lower in physician groups than in health care recipient groups (26% to 48% vs 44% to 61%, Table 1). Thus, selection bias cannot be excluded. Second, it was not sure that health care recipients, particularly adult day care participants, correctly understood the study terminology. Third, some of the

items used in the survey were not mutually exclusive. Nevertheless, a similar trend in priorities of outcome measures according to either side of health care providers or recipients suggests that the overall results were not significantly affected by these limitations.

Conclusion

We demonstrated that there was significant agreement and disagreement of health outcome prioritization between health care providers and recipients in geriatric medicine. Health care providers and recipients agreed on high priority for function and low priority for reduction in mortality, but there was obvious disagreement in how they perceived QOL, treatment effect, and patient satisfaction as goals of care. Such disagreement necessitates better communication between providers and recipients to reach goals of care that are mutually understandable and tailored to meet patients' specific needs. The low importance of reduction in mortality and patient satisfaction ascribed by health care recipients may question the value of these outcomes as a way to assess treatment interventions and quality of care. We propose that the priorities of health care outcomes and their differences between providers and recipients demonstrated in this study should be taken into account in the health care of older patients and the design of health care policies and research.

Acknowledgments

We thank the following individuals for helping the acquisition and/or interpretation of data: Dr Yumi Kameyama, Dr Kiyoshi Yamaguchi, and Dr Sumito Ogawa, Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo; Dr Katsuya Iijima, Institute of Gerontology, The University of Tokyo; Dr Yoichi Kosaka, Department of Geriatric Medicine, Tohoku University Graduate School of Medicine; Dr Hiroyuki Umegaki and Dr Yusuke Suzuki, Department of Geriatric Medicine, Nagoya University Graduate School of Medicine; and Dr Yukihiko Ikehata and Dr Ban Mihara, Japan Association of Medical and Care Facilities.

References

1. Tamiya N, Noguchi H, Nishi A, et al. Population ageing and wellbeing: Lessons from Japan's long-term care insurance policy. *Lancet* 2011;378:1183–1192.
2. Ministry of Internal Affairs and Communications Statistics Bureau, Director General for Policy Planning and Statistical Research and Training Institute. Population Estimate. 2012. Available at: <http://www.stat.go.jp/english/index.htm>. Accessed July 8, 2012.
3. Scott IA, Guyatt GH. Cautionary tales in the interpretation of clinical studies involving older persons. *Arch Intern Med* 2010;170:587–595.
4. Barnett K, Mercer SW, Norbury M, et al. Epidemiology of multimorbidity and implications for health care, research, and medical education: A cross-sectional study. *Lancet* 2012;380:37–43.
5. Boyd CM, Darer J, Boulton C, et al. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: Implications for pay for performance. *JAMA* 2005;294:716–724.
6. Tinetti ME, Bogardus ST Jr, Agostini JV. Potential pitfalls of disease-specific guidelines for patients with multiple conditions. *N Engl J Med* 2004;351:2870–2874.
7. Hanlon JT, Schumacher KE, Ruby CM, Weinberger M. Suboptimal prescribing in older inpatients and outpatients. *J Am Geriatr Soc* 2001;49:200–209.
8. Higashi T, Shekelle PG, Solomon DH, et al. The quality of pharmacologic care for vulnerable older patients. *Ann Intern Med* 2004;140:714–720.
9. American Geriatrics Society. Updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2012;60:616–631.
10. Gallagher P, Ryan C, Byrne S, et al. STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment). Consensus validation. *Int J Clin Pharmacol Ther* 2008;46:72–83.
11. Kaur S, Mitchell G, Vitetta L, Roberts MS. Interventions that can reduce inappropriate prescribing in the elderly: A systematic review. *Drugs Aging* 2009;26:1013–1028.
12. Roberts H, Khee TS, Philip I. Setting priorities for measures of performance for geriatric medical services. *Age Ageing* 1994;23:154–157.
13. Voigt I, Wrede J, Diederichs-Egidi H, et al. Priority setting in general practice: Health priorities of older patients differ from treatment priorities of their physicians. *Croat Med J* 2010;51:483–492.

14. Junius-Walker U, Stolberg D, Steinke P, et al. Health and treatment priorities of older patients and their general practitioners: A cross-sectional study. *Qual Prim Care* 2011;19:67–76.
15. Symonds T, Berzon R, Marquis P, Rummans TA. The clinical significance of quality-of-life results: Practical considerations for specific audiences. *Mayo Clin Proc* 2002;77:572–583.
16. Gurwitz JH. Polypharmacy: A new paradigm for quality drug therapy in the elderly? *Arch Intern Med* 2004;164:1957–1959.
17. Fenton JJ, Jerant AF, Bertakis KD, Franks P. The cost of satisfaction: A national study of patient satisfaction, health care utilization, expenditures, and mortality. *Arch Intern Med* 2012;172:405–411.
18. Chang JT, Hays RD, Shekelle PG, et al. Patients' global ratings of their health care are not associated with the technical quality of their care. *Ann Intern Med* 2006;144:665–672.
19. Fried TR, Tinetti ME, Iannone L, et al. Health outcome prioritization as a tool for decision making among older persons with multiple chronic conditions. *Arch Intern Med* 2011;171:1854–1856.
20. Rosenfeld KE, Wenger NS, Kagawa-Singer M. End-of-life decision making: A qualitative study of elderly individuals. *J Gen Intern Med* 2000;15:620–625.
21. Fried TR, Bradley EH, Towle VR, Allore H. Understanding the treatment preferences of seriously ill patients. *N Engl J Med* 2002;346:1061–1066.

アルツハイマー型認知症治療薬の 薬剤選択基準

国立長寿医療研究センター
内科総合診療部 部長
遠藤 英俊

File No.3

オビニオン

クリニカル ポイント

トピック

カルチャー

Medical Square

超高齢化社会を迎えたわが国では、高齢者の増加に伴いアルツハイマー型認知症（AD）患者が増加している。いまだADを完治させる薬剤は開発されていないものの、わが国では2011年、12年振りにADの進行を抑制する新薬が発売され、薬剤の選択肢が広がった。選択肢が広がったことは歓迎すべきであるが、薬剤選択にあたっては何を基準とすればよいのか？

今回のメディカル・スクウェアでは、認知症治療の最前線で活躍されている国立長寿医療研究センターの遠藤英俊氏にAD治療薬の選択基準を中心に執筆いただいた。

はじめに

認知症診療は今やすべての医師にとって避けては通れない状況になっている。アルツハイマー型認知症（AD）に対して、4種類の薬剤が使用可能となり、診断の重要性と共に、ステージ診断や周辺症状（BPSD）の評価が重要であり、薬剤を適切に選択する必要性がある（表1）。2010年には「認知症疾患治療ガイドライン」¹⁾も発表されており、これに従って診断、治療を行うことが望ましい。すなわち、治療にあたり知識と経験が必要とされる。薬剤の種類としてはコリンエステラーゼ阻害剤が3種類とNMDA受容体拮抗剤が1種類である。重症度やBPSD、患者背景にあわせて、適切に選択する必要がある。AD治療薬は認知機能の進行遅延の他、ADLにかかわる介護時間の短縮、介護の見守り時間の短縮、入所時期の遅延による医療費・介護費用の削減などの効果が報告されている。さらに認知

症に対する良質なケアや脳リハビリが加われれば、治療効果も向上する。その結果として、認知症の人やその家族のQOL向上において重要な意義がある。そのためにもAD診療において家族への指導、支援が重要となる。現在の治療薬では病気は完治しないが、病状を修飾することができ、病気の進行を遅延させることができる。すなわち、これらの薬剤の利点と欠点を知り、病期、症状にあわせて選択することが重要である。

アルツハイマー型認知症の 未治療患者への薬剤選択基準

AD治療薬にはそれぞれステージからみた選択基準の原則がある。承認された重症度に応じて薬剤を選択する必要があり、作用や副作用を適切に評価して、無効であれば、他の薬剤に変更したり、併用を検討する。

最初に治療薬はADになってから始めるか、

表1 アルツハイマー型認知症の治療薬 (各薬剤の添付文書より)

一般名 (製品名)	ドネペジル (アリセプト®)	リバスチグミン (イクセロン®, リバスタッチ®)	ガランタミン (レミニール®)	メマンチン (メマリー®)
作用機序	アセチルコリン エステラーゼ阻害	アセチルコリン エステラーゼおよび ブチリルコリン エステラーゼ阻害	アセチルコリンエステ ラーゼ阻害およびニコ チン性アセチルコリン 受容体へのAPL作用	NMDA受容体 チャネル阻害
アルツハイマー型 認知症の適応症	軽度から高度	軽度及び中等度	軽度及び中等度	中等度及び高度
錠形	錠, 細粒, 口腔内 崩壊錠, 内用ゼリー	パッチ剤	錠, 口腔内崩壊錠, 内用液	錠
投与回数	1日1回	1日1回	1日2回	1日1回

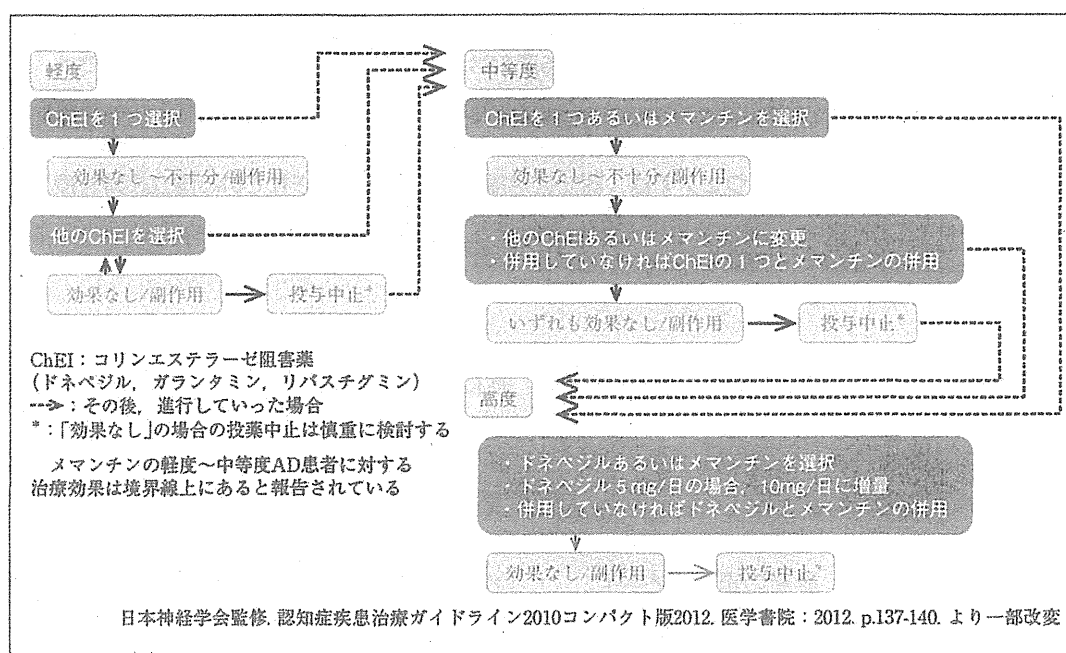


図1 病期別の治療薬剤の選択アルゴリズム

MCIレベルから開始するのにはまだ十分なエビデンスはない。しかしながら薬剤の基礎的データからみれば, なるべく早期に治療を開始することが望ましいといえる。

軽度であれば, ドネペジル, ガランタミン, リバスチグミンから1剤を選択する。中等度であれば, ドネペジル, ガランタミン, リバスチグミン, メマンチンから1剤を選択するか, またはメマンチンと他の3剤のうちの1

つを併用することが可能である。高度であればドネペジルとメマンチンに適応が承認されている。図1に病期別の治療薬剤の選択アルゴリズムを示した。

なおファーストチョイスについては, 歴史的にみても, 安全性からみてもドネペジルが選ばれることが多い。しかしながらリバスチグミンは, 買い物をするなどのIADLの改善効果を示すので, 初期の患者に勧められる。AD

に脳血管障害を合併しているケースではガラランタミンが推奨される。また中等度で易興奮や攻撃などのBPSDがある場合にはメマンチンが推奨される。

治療効果不十分の場合の 薬剤選択基準

治療効果不十分な場合や副作用で変更する場合には、やはり重症度別に判断する。副作用として消化器症状が強い場合には、リバスチグミンやメマンチンを選択する。副作用として皮膚症状がある場合にはリバスチグミン以外のものを選択する。

なお、ドネペジルから変更する場合にはガラランタミンもリバスチグミンも認知機能低下のギャップはそれほどなく、スムーズな変更が可能であるとの報告も存在する。

BPSDからみた選択基準

BPSDに対しては適応がとれていない薬剤が多い。以前は定型抗精神病薬が用いられてきたが、最近ではリスペリドンやオランザピン、アリピプラゾールなどの非定型抗精神病薬が用いられるようになってきた。しかし米国ではこの種類の薬剤は脳卒中の発生率が高いとして、ADには禁忌となっている。日本では副作用が少なく、かつ有用性があるため、慎重に適応を判断し使用されている。これらの薬剤では副作用の発現頻度が比較的高いため、副作用を軽減するためにも少量から投与することがポイントである。また認知症のBPSDには抑肝散がよく用いられている。特にレビー小体型認知症のBPSDには有効性が高いとされている。副作用としては低カリウム血症に注意する。またメマンチンは興奮や攻撃などのBPSDに有効であることが知られている。ただし、発現頻度は低いが、傾眠傾向が報告されている。BPSDをコントロール

することは医師だけでなく、家族や本人の苦痛をとる意味においても重要である。

薬剤の変更のタイミング

薬剤の変更は、効果を短期間で判断せずに、数カ月間みた後に判断する。

すなわち、コリンエステラーゼ阻害剤から1剤を選択し、2～3カ月ごとに効果を観察し、6カ月程度みても効果がみられない場合には他の薬剤に変更する。その際には薬剤の特徴を考慮する。また、メマンチンの併用も選択肢として考慮する。なお、攻撃や興奮などのBPSDがある場合には、メマンチンを初期から投与することも考慮する。

薬剤の中止について

薬剤の中止時期については、嚥下障害などで食事がとれなくなった場合、介護施設に入所した場合、病状が悪化した場合などである。また重症化し、薬剤の効果が期待できないと判断された場合である。

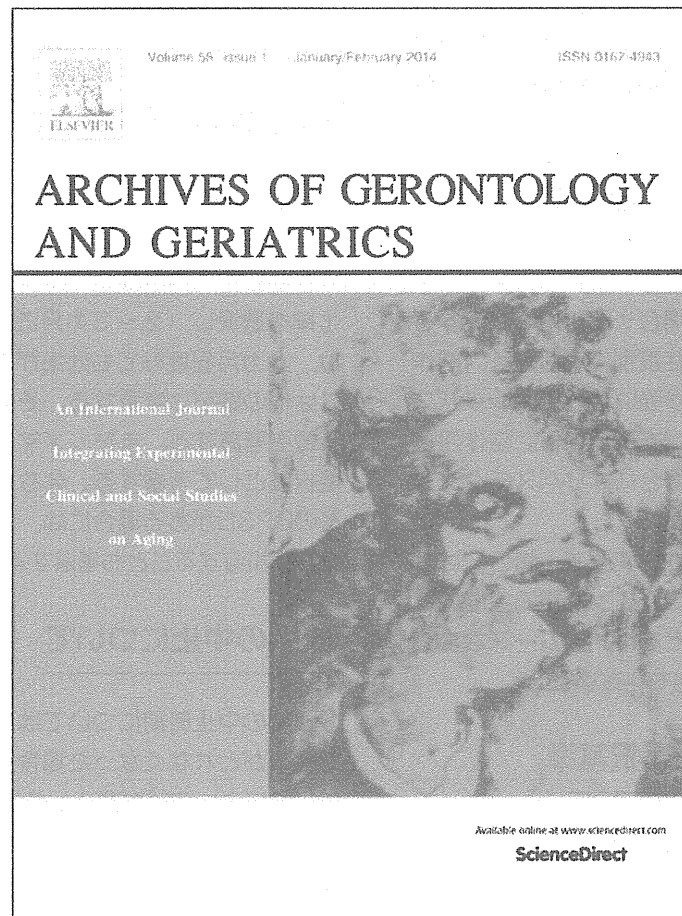
おわりに

ADを早期に発見し、早期治療した場合に4剤のさらなる有用性に期待している。さらに長期使用時の効果についても一定のエビデンスが存在する。その有用性は確かであろう。しかし日本での効果の検証は、今後一定の時間を経て判断する必要がある。また、新薬に対する認知症の人や家族の期待は大きいですが、効果に対する過剰な期待は問題である。

参考文献

- 1) 日本神経学会監修. 認知症疾患治療ガイドライン. 医学書院: 2010.

Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/authorsrights>



Burden reduction of caregivers for users of care services provided by the public long-term care insurance system in Japan



Hiroyuki Umegaki^{a,*}, Madoka Yanagawa^a, Zen Nonogaki^a,
Hirotaka Nakashima^a, Masafumi Kuzuya^a, Hidetoshi Endo^b

^a Nagoya University Graduate School of Medicine, Department of Community Healthcare & Geriatrics, 65 Tsuruma-cho, Showa-ku, Nagoya, Aichi 466-8550, Japan

^b National Center for Geriatrics and Gerontology, Department of Comprehensive Geriatric Medicine, 35 Morioka Gengo, Obu, Aichi, Japan

ARTICLE INFO

Article history:

Received 28 May 2013

Received in revised form 24 August 2013

Accepted 29 August 2013

Available online 7 September 2013

Keywords:

Long-term care insurance

Care burden

Caregivers

ABSTRACT

We surveyed the care burden of family caregivers, their satisfaction with the services, and whether their care burden was reduced by the introduction of the LTCI care services. We randomly enrolled 3000 of 43,250 residents of Nagoya City aged 65 and over who had been certified as requiring long-term care and who used at least one type of service provided by the public LTCI; 1835 (61.2%) subjects returned the survey. A total of 1015 subjects for whom complete sets of data were available were employed for statistical analysis. Analysis of variance for the continuous variables and χ^2 analysis for that categorical variance were performed. Multiple logistic analysis was performed with the factors with p values of <0.2 in the χ^2 analysis of burden reduction. A total of 68.8% of the caregivers indicated that the care burden was reduced by the introduction of the LTCI care services, and 86.8% of the caregivers were satisfied with the LTCI care services. A lower age of caregivers, a more advanced need classification level, and more satisfaction with the services were independently associated with a reduction of the care burden. In Japanese LTCI, the overall satisfaction of the caregivers appears to be relatively high and is associated with the reduction of the care burden.

© 2013 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

The public long-term care insurance (LTCI) system was introduced in 2000 to meet the increasing need for elder care in the rapidly aging society of Japan (Tamiya et al., 2011). LTCI provides services according to care levels 1–5 and support levels 1 and 2 (Ozawa & Nakayama, 2005; Tsutsui & Muramatsu, 2007). The individuals who need continuous care are classified into one of the care levels 1–5 according to their mental or physical disabilities, whereas those who need support for daily activities but do not need care are classified as support level 1 or 2.

The purpose of LTCI is to maintain the dignity and independent daily life routines of elderly individuals who need support. The socialization of elderly care through institutional and community-based LTC services was promoted under the slogan “from care by family to care by society.” The introduction of LTCI was intended to relieve the burden of care on family members. It has been reported that usage of LTCI care services successfully relieves the burden on family caregivers (Kumamoto, Arai, & Zarit, 2006; Nakagawa & Nasu, 2011). One study showed that a heavier care burden was

associated with patient mortality and hospitalization (Kuzuya et al., 2011), and another study demonstrated that alleviation of the caregivers’ burden is essential to prevent institutionalization (Oyama et al., 2012). The factors associated with the reduction of the care burden by the introduction of care services by LTCI have not been fully investigated.

A study from the USA reported that the claimants of LTCI provided by a private insurance company had high levels of satisfaction (Cohen, Miller, & Weinrobe, 2001). The degree of satisfaction may reflect the appropriateness of the services provided. An investigation of satisfaction with the services provided by public LTCI in Japan is warranted.

We surveyed family caregivers of the recipients who actively use LTCI care services in Japan and asked about their care burden, their satisfaction with the services and whether their care burden was reduced by the introduction of the LTCI care services. The primary purpose of this study was to investigate the factors associated with reduction of the care burden by LTCI care services.

2. Methods

This study was carried out in Nagoya City, in central Japan. Nagoya City has a population of 2,261,377 (April 2010), of whom

* Corresponding author. Tel.: +81 52 744 2364; fax: +81 52 744 2371.
E-mail address: umegaki@med.nagoya-u.ac.jp (H. Umegaki).

21.4% were 65 years of age or older. This study was developed and organized by Nagoya City and was supported by the Department of Community Healthcare & Geriatrics of the Nagoya University Graduate School of Medicine. Written informed consent was obtained from all the participants. The city office randomly enrolled 3000 residents of Nagoya City aged 65 and over who had been certified as requiring long-term care and who used at least one type of service provided by the public LTCI in April of 2010, according to the LTCI database of the city (43,250 subjects). A questionnaire was sent to their principal caregivers by mail, and 1835 (61.2%) subjects returned the survey. The investigators obtained the anonymous data from the city office. In this study, the data of 1015 subjects for whom complete sets of data were available were used for the statistical analysis. The questionnaire for the caregivers included the Zarit Burden Scale short version (Zarit-8) (Kumamoto & Arai, 2004) and the following additional questions: (1) Are you satisfied with the services provided by LTCI? (satisfied, somewhat satisfied, somewhat dissatisfied, dissatisfied); and (2) Has the service reduced your care burdens? (reduced greatly, reduced, have not changed, increased, increased greatly). Analysis of variance for the continuous variables and χ^2 analysis for the categorical variance were performed. In the analysis of variance for the continuous variables and the χ^2 analysis, the two additional items were each divided into two categories: satisfied (satisfied and somewhat satisfied) vs. dissatisfied (somewhat dissatisfied and dissatisfied) and reduced (reduced greatly, reduced) vs. not reduced (not changed, increased, increased greatly). Multiple logistic analysis of the factors with *p* values of <0.2 in the χ^2 analysis of the burden reduction was performed.

3. Results

The results regarding the care burden are shown in Table 1. The caregivers of male care recipients bear a heavier burden than caregivers of female recipients, and female caregivers had higher Zarit-8 scores than males. With respect to the duration of care, longer care was associated with a greater burden. Caregivers of single individuals reported a lighter burden.

We found clear differences in the caregivers' burdens between the support and care levels, with the care burden for care levels 1–5 being significantly higher than that for the support levels 1–2. No significant differences were found within either of the groups by the post-hoc analysis.

Of the caregivers, 28.5% (289 of 1015) were satisfied with the services provided by the insurance, and 58.3% (592) were somewhat satisfied. Only 10.7% (109) and 2.5% (25) were dissatisfied or somewhat dissatisfied with the services, respectively. The degree of satisfaction with the care services was associated with the scores on the Zarit burden scale 8 (Table 1).

The majority of the caregivers indicated that their burden was greatly reduced (*n* = 98, 9.7%) or reduced (*n* = 600, 59.1%) as a result of the LTCI services. The burden did not change for 27.9% (*n* = 283) of the caregivers, whereas 2.5% (25) considered their burden to have increased after the introduction of the LTCI services, and 0.9% (9) thought their burden had increased greatly. The rates of caregivers by type who felt their care burden was reduced (reduced or greatly reduced) are shown in Table 2. Several caregiver groups showed tendencies to feel a reduced burden including the caregivers of older recipients, younger caregivers, and caregivers of patients with more advanced need classifications. Greater satisfaction with the care services was associated with reduction of the burden.

To further investigate the factors associated with reduction of the care burden, a multiple logistic analysis with the factors having *p* values <0.2 in Table 2 was performed. The analysis showed that the younger age of caregivers, the more advanced levels of need

Table 1
Subjects' characteristics and Zarit Burden Score-8.

		Zarit Burden Score-8	<i>p</i> value
Number	1015		
Number of types of services used (1–16)	2.9 ± 1.8		
Zarit-8 (0–32)		10.8 ± 8.5	
	% in each category		
Age of care recipients			0.074
65–69	6.8	9.8 ± 7.3	
70–74	12.3	12.7 ± 8.9	
75–79	19.8	10.7 ± 8.9	
80–84	17.8	10.0 ± 8.7	
85–89	20.2	10.5 ± 8.3	
90+	23.0	11.3 ± 8.3	
Gender of care recipients			0.043
Male	35.8	11.6 ± 8.5	
Female	64.2	10.5 ± 8.5	
Classification level			<0.001
Support level 1	9.2	6.1 ± 7.4	
Support level 2	10.9	7.3 ± 7.4	
Care need level 1	13.9	11.6 ± 8.6	
Care need level 2	14.4	11.2 ± 8.4	
Care need level 3	18.5	13.2 ± 8.8	
Care need level 4	16.3	11.7 ± 8.3	
Care need level 5	16.6	11.3 ± 8.1	
Age of caregivers			0.418
Under 40	2.0	12.0 ± 9.7	
40–64	45.8	10.5 ± 8.2	
65–74	27.6	11.4 ± 8.4	
75+	24.6	11.2 ± 8.9	
Gender of caregivers			<0.001
Male	30.6	9.3 ± 8.3	
Female	69.4	11.6 ± 8.5	
Family structure of care recipients			0.001
Single	8.4	6.3 ± 7.7	
Couple	29.8	10.8 ± 9.0	
With children	58.6	11.3 ± 8.2	
Other	3.2	12.9 ± 7.3	
Relationship			0.052
Spouse	39.4	11.5 ± 8.8	
Child	36.7	10.1 ± 8.1	
Child-in-law	17.6	12.0 ± 8.3	
Other	6.3	11.2 ± 8.9	
Duration of care			0.011
Less than 1 year	7.4	8.8 ± 8.2	
1–3 years	31.1	9.9 ± 8.1	
3–5 years	22.3	11.6 ± 8.7	
5–10 years	27.3	11.4 ± 8.5	
More than 10 years	11.5	12.1 ± 9.2	
Satisfaction with care services			<0.001
Satisfied	28.5	8.8 ± 7.7	
Somewhat satisfied	58.3	11.0 ± 8.4	
Somewhat dissatisfied	10.7	14.3 ± 9.0	
Dissatisfied	2.5	15.3 ± 10.8	

p value by one-way analysis of variance.
Zarit burden scale 8 scores are shown as mean ± SD.

classification, and greater satisfaction with the services provided were independently associated with reduction of the care burden (Table 3). Sixteen types of services were available through LTCI, and adjustment for the number of the types of services used did not change these results.

4. Discussion

In this study almost 70% of the caregivers of the care recipients who used the care services provided by LTCI felt a reduction of the care burden by the introduction of the services. Satisfaction with the services provided by LTCI, a younger age of caregivers, and more advanced care need certification were significantly associated with the reduction of the care burden resulting from the introduction of public LTCI care services.

Table 2
Percent of the subjects whose care burden was reduced.

	Care burden reduced, % (number)	p value
Number	68.8 (698)	
Age of care recipients		0.133
65–69	75.4 (52)	
70–74	62.4 (78)	
75–79	64.8 (118)	
80–84	66.7 (134)	
85–89	70.2 (144)	
90+	73.8 (172)	
Gender of care recipients		0.477
Male	68.4 (245)	
Female	69.1 (444)	
Classification level		0.127
Support level 1	58.1 (54)	
Support level 2 (%)	66.4 (73)	
Care need level 1 (%)	70.0 (98)	
Care need level 2 (%)	68.3 (99)	
Care need level 3 (%)	66.1 (123)	
Care need level 4 (%)	72.6 (119)	
Care need level 5 (%)	74.9 (125)	
Age of caregivers		0.133
Under 40 (n)	75.0 (15)	
40–64 (n)	71.1 (322)	
65–74 (n)	70.0 (191)	
75+ (n)	63.8 (155)	
Gender of caregivers		0.408
Male (n)	68.3 (207)	
Female (n)	69.3 (476)	
Family structure of care recipients		0.809
Single (%)	71.4 (60)	
Couple (%)	66.9 (200)	
With children (%)	59.2 (407)	
Other (%)	71.9 (23)	
Relationship		0.812
Spouse (%)	68.3 (259)	
Child (%)	69.4 (245)	
Child-in-law (%)	72.2 (122)	
Other (%)	67.2 (41)	
Duration of care		0.750
Less than 1 year (%)	63.0 (46)	
1–3 years (%)	68.8 (212)	
3–5 years (%)	70.5 (158)	
5–10 years (%)	69.3 (187)	
More than 10 years (%)	65.8 (75)	
Satisfaction with care services		<0.001
Satisfied (%)	78.2 (226)	
Somewhat satisfied (%)	68.4 (405)	
Somewhat dissatisfied (%)	55.0 (60)	
Dissatisfied (%)	28.0 (7)	

p values by χ^2 analysis were shown.

Previous studies reported that respite services including home help, day care, and residential respite (short stay service) were associated with alleviation of the care burden (Desrosiers et al., 2004; Garcés, Carretero, Ródenas, & Alemán, 2010; Hawranik & Strain, 2000; Hoskins, Coleman, & McNeely, 2005; Shaw et al., 2009; Theis, Moss, & Pearson, 1994; Warren, Kerr, Smith, & Schalm, 2003; Zarit, Gaugler, & Jarrot, 1999; Zarit, 1996, 2002). The reduction of the care burden reported by caregivers in the current survey may be because of the respite services provided by LTCI. The

content of the services associated with alleviation of the care burden should be investigated further.

This survey shows that the overall satisfaction of the caregivers of individuals using LTCI services in Japan is relatively high (86.8% of the caregivers were satisfied or somewhat satisfied). According to a report from the USA, the LTCI provided by private insurance companies satisfied approximately two-thirds of the claimants (Cohen et al., 2001), and the current results suggested a comparable satisfaction rate for the Japanese public LTCI. The introduction of care services by public LTCI seemed to contribute to a reduction in the care burden, as previously reported (Kumamoto et al., 2006). The report from the USA showed that 72% of the claimants felt stress was reduced by the introduction of the services (Cohen et al., 2001), a figure that was comparable to the rate of this survey (68.8%). More satisfaction with the care services was associated with the reduction of care burden in the current study. Although the current cross-sectional survey did not elucidate the causal relationship, the provision of services that matched the needs of the care recipients and caregivers would lead to the reduction of the care burden and satisfaction with the program. The detailed assessment of the needs of care recipients and caregivers and providing appropriate services would be critical for the burden reduction of the caregivers. The caregivers of recipients with more advanced care need certifications tended to feel that their burden had been reduced by the introduction of the care services. It is very relevant for many countries with increasing elderly population that public LTCI system could reduce care burden of the caregivers of more advanced care needs. In Japanese LTCI care recipients with more advanced care need certifications are afforded more services. Greater frequency and intensity of care services have been associated with the perception of reduced care burden (Garcés, Carretero, Ródenas, & Sanjosé, 2009). In the current study adjustment by the number of different types of care services used did not change the association of the need classification with the reduction of care burden in the multiple logistic analysis. We only surveyed the number of the types of the services. This survey may not be a good index of the intensity of the service, such that adjustment with this index alone may not have been sufficient.

Younger caregivers tended to perceive a reduction in the care burden by the introduction of care services by LTCI. This perception may be because younger caregivers require more time for personal business, and the introduction of the services allowed them that freedom, which may have led to a reduced burden. If so, the LTCI system could provide chances for the younger caregivers to participate in social activities, which may be a relevant message for the countries with increasing elder populations.

Whereas nearly 70% of the caregivers considered their care burden to have been reduced, the burden of some caregivers was found to have increased. The reasons remain unclear, but might include the psychological distress of the presence of home-helpers, the financial costs and time expenditures resulting from the services could be associated with an increased care burden. The reasons for this increase should be investigated. The rates of satisfaction with the care services provided by LTCI were relatively high, but the factors associated with dissatisfaction with the services should be explored. In Japan “care managers” make “care

Table 3
Multiple logistic analysis for the reduction of care burden.

	B	Odds ratio	95% CI	p value
Age of care recipients	0.041	1.042	0.952–1.141	0.371
Age of caregiver	–0.178	0.837	0.709–0.987	0.034
Certified level	0.134	1.143	1.060–1.232	<0.001
Satisfaction with public LTCI (1: dissatisfied greatly; 4: satisfied greatly)	0.688	1.990	1.615–2.452	<0.001

plans” for each care recipient, based on the certification. A system of assessing the care planning would be warranted to reduce the number of dissatisfied and/or heavily burdened caregivers.

In this study, female caregivers reported heavier burdens than male caregivers, which is consistent with a report from Finland (Pöysti et al., 2012). Another study found that female caregivers reported lighter burdens than male caregivers (Rosdinom, Zarina, Zanariah, Marhani, & Suzaily, 2013). Gender differences in care burdens may be subject to cultural, social, and biological factors. In this study, the caregivers of male recipients reported a heavier burden. The reasons for the association were unclear, but the physical burden of providing care for male recipients (e.g., moving them) may be greater.

We found a relationship between the Zarit-8 scores and the duration of care. A longer duration of care appears to exhaust caregivers. This finding agreed with a report by Limpawattana, Theeranut, Chindaprasirt, Sawanyawisuth, and Pimporm (2013). Single persons living alone appeared to have relatively preserved function and had lower need classifications (44% of them were at the support levels). The lower burden of their caregivers was most likely caused by the overall lighter burden of their care.

In this survey, the burden reported by caregivers of elderly individuals classified at any of the “care” levels 1–5 was significantly higher than that reported by caregivers of those classified at the support levels 1–2. This finding suggests that the stratification of support and care levels in the Japanese LTCI system is reasonable. Among the “care” levels 1–5, we found no significant differences in terms of the care burden. In the current analysis, the more advanced care levels were associated with care burden reduction. The current cross-sectional analysis did not reveal whether the care burden reduction resulting from the introduction of LTCI services led to the homogenous care burden among each “care” level. A prospective study would be warranted for further clarification.

The major limitation of this study is its cross-sectional design. It is unclear whether the reduced burden reported by satisfied caregivers was caused by their satisfaction or whether the reduction in the care burden induced by the introduction of the LTCI services led to the satisfaction of the caregivers. The caregivers who indicated a reduction in the care burden had lower Zarit-8 scores, but it is not clear that these lower scores were caused by the introduction of the care services. A prospective survey to investigate the changes in the burden scale scores before and after the introduction of the care services would provide more information regarding the association between LTCI and the care burden. The second limitation of the study was the response rate. We analyzed 34% of the randomly selected samples. The non-responders or incomplete responders may have had less satisfaction or greater care burden levels, and caution in the interpretation of this study is warranted.

This study was performed on a relatively large sample of randomly selected cases of elder care services provided by LTCI in an urban area in Japan. We hypothesize that the sample well represents the local characteristics, but it is not clear whether it is applicable to other areas including rural areas of Japan. In this analysis, the subjects with incomplete data sets were excluded. The age, gender, and certified care levels were not significantly different between the included and excluded subjects; the excluded subjects primarily lacked data from the Zarit burden scale. Careful interpretation of the current results is warranted.

The rate of satisfaction with the care services provided by LTCI in Japan was relatively high, and the degree of satisfaction was associated with the reduction of the care burden.

Conflict of interest

None declared.

Acknowledgments

Authors' contributions: HU contributed to the study design, statistical analysis, interpretation of the data, and preparation of the manuscript. MY, NZ, HN, and MK contributed to the acquisition of the data and interpretation of the data. HE contributed to the study design. **Sponsor's role:** This study was partly supported by funding from the Japanese Ministry of Health, Welfare and Labor (H24YA003 and H24UB005-01).

References

- Cohen, M. A., Miller, J., & Weinrobe, M. (2001). Patterns of informal and formal caregiving among elders with private long-term care insurance. *Gerontologist, 41*, 180–187.
- Desrosiers, J., Hebert, R., Payette, H., Roy, P.-M., Tousignant, M., Cote, S., et al. (2004). Geriatric day hospital: Who improves the most? *Canadian Journal on Aging, 23*, 21742.
- Garcés, J., Carretero, S., Ródenas, F., & Alemán, C. (2010). A review of programs to alleviate the burden of informal caregivers of dependent persons. *Archives of Gerontology and Geriatrics, 50*, 254–259.
- Garcés, J., Carretero, S., Ródenas, F., & Sanjosé, V. (2009). Variables related to the informal caregivers' burden of dependent senior citizens in Spain. *Archives of Gerontology and Geriatrics, 48*, 372–379.
- Hawranik, L. A., & Strain, P. G. (2000). *Health of informal caregivers: effects of gender, employment and use of home care services*. Winnipeg, Manitoba: University of Manitoba, Centre on Aging.
- Hoskins, S., Coleman, M., & McNeely, D. (2005). Stress in carers of individuals with dementia and community mental health teams: An uncontrolled evaluation study. *Journal of Advanced Nursing, 50*, 3255.
- Kumamoto, K., & Arai, Y. (2004). Validation of 'personal strain' and 'role strain': Subscales of the short version of the Japanese version of the Zarit Burden Interview (J-ZBI-8). *Psychiatry and Clinical Neuroscience, 58*, 606–610.
- Kumamoto, K., Arai, Y., & Zarit, S. H. (2006). Use of home care services effectively reduces feelings of burden among family caregivers of disabled elderly in Japan: Preliminary results. *International Journal of Geriatric Psychiatry, 21*, 163–170.
- Kuzuya, M., Enoki, H., Hasegawa, J., Izawa, S., Hirakawa, Y., Shimokata, H., et al. (2011). Impact of caregiver burden on adverse health outcomes in community-dwelling dependent older care recipients. *American Journal of Geriatric Psychiatry, 19*, 382–391.
- Limpawattana, P., Theeranut, A., Chindaprasirt, J., Sawanyawisuth, K., & Pimporm, J. (2013). Caregivers burden of older adults with chronic illnesses in the community: A cross-sectional study. *Journal of Community Health, 38*, 40–45.
- Nakagawa, Y., & Nasu, S. (2011). Association between components of family caregivers' sense of burden and types of paid care services provided in Japan. *Aging & Mental Health, 15*, 687–701.
- Oyama, Y., Tamiya, N., Kashiwagi, M., Sato, M., Ohwaki, K., & Yano, E. (2012). Factors that allow elderly individuals to stay at home with their families using the Japanese long-term care insurance system. *Geriatrics & Gerontology International (in press)*.
- Ozawa, M. N., & Nakayama, S. (2005). Long-term care insurance in Japan. *Journal of Aging & Social Policy, 17*, 61–84.
- Pöysti, M. M., Laakkonen, M. L., Strandberg, T., Savikko, N., Tilvis, R. S., Eloniemi-Sulkava, U., et al. (2012). Gender differences in dementia spousal caregiving. *International Journal of Alzheimer's Disease* <http://dx.doi.org/10.1155/2012/162960>.
- Rosdinom, R., Zarina, M. Z., Zanariah, M. S., Marhani, M., & Suzaily, W. (2013). Behavioural and psychological symptoms of dementia, cognitive impairment and caregiver burden in patients with dementia. *Preventive Medicine* <http://dx.doi.org/10.1016/j.ypmed.2012.12.025> pii:S0091-7435(13)00003-0.
- Shaw, C., McNamara, R., Abrams, K., Cannings-John, R., Hood, K., Longo, M., et al. (2009). Systematic review of respite care in the frail elderly. *Health Technology Assessment, 13*, 1–224.
- Tamiya, N., Noguchi, H., Nishi, A., Reich, M. R., Ilegami, N., Hashimoto, H., et al. (2011). Population ageing and wellbeing: Lessons from Japan's long-term care insurance policy. *Lancet, 378*, 1183–1192.
- Theis, S. L., Moss, J. H., & Pearson, M. A. (1994). Respite for caregivers: An evaluation study. *Journal of Community Health Nursing, 11*, 3194.
- Tsutsui, T., & Muramatsu, N. (2007). Japan's universal long-term care system reform of 2005: Containing costs and realizing a vision. *Journal of the American Geriatrics Society, 55*, 1458–1463.
- Warren, S., Kerr, J. R., Smith, D., & Schalm, C. (2003). The impact of adult day programs on family caregivers of elderly relatives. *Journal of Community Health Nursing, 20*, 209.
- Zarit, S. H. (1996). *Families at the crossroads: Caring for disabled older people*. Pennsylvania: Penn State University, Gerontology Center, College of Health and Human Development.
- Zarit, S. H., Gaugler, J. E., & Jarrot, S. E. (1999). Useful services for families: Research findings and directions. *International Journal of Geriatric Psychiatry, 14*, 165.
- Zarit, S. H. (2002). Caregiver's burdens. In S. Andrieu & J. P. Aquino (Eds.), *Family and professional caregivers: Findings lead to action* (pp. 20–). Paris: Serdi Edition and Fondation Médéric Alzheimer.

レビー小体型認知症における抑うつ

阪井 一雄, 山根 有美子, 山本 泰司, 前田 潔

精神神経学雑誌第115巻第11号別刷

平成25年11月25日発行

PSYCHIATRIA ET NEUROLOGIA JAPONICA

Annus 115, Numerus 11, 2013