ORIGINAL ARTICLE

Bowel incontinence is related to improvement in basic activities of daily living in residents of long-term health care facilities for the elderly in Japan

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Background: The purpose of the present study is to clarify the target criteria for care in long-term health care facilities for the elderly in Japan and to investigate the relationship between changes in basic activities of daily living (BADL) over 1 year and the comprehensive geriatric assessment (CGA) scale.

Methods: An observational study was conducted in a facility in Nagoya, Japan. The participants consisted of 54 residents. The following four scales of comprehensive geriatric assessment were administered to the residents in both 2000 and 2001: Barthel index (BI), Lawton scale, mini-mental state examination and geriatric depression scale 15.

Results: The Barthel index was significantly improved in 2001 compared with 2000 ($P = 0.007$). The Lawton scale was significantly lower in 2001 ($P = 0.029$). Neither the minimental state examination nor geriatric depression scale 15 scores changed significantly. To determine the factors that influenced the change in BADL, logistic regression analyses were performed using the above four scales as independent variables and the BI change as a dependent variable. In multivariate analysis, a BI score of less than 75 approached significance for improvement in BADL ($P = 0.094$, odds ratio = 2.79). Other logistic regression analyses were also performed using each ADL task in BI as an independent variable and the change in BI as a dependent variable. In multivariate analysis, bowel incontinence was a significant independent variable ($P = 0.006$, odds ratio = 10.9).

Conclusion: As bridging facilities between acute-care hospitals and home, long-term health care facilities are a reasonable choice for the elderly with bowel incontinence.

Keywords: aged, geriatric assessment, incontinence, nursing homes.

Introduction

In Japan, the number of elderly who require long-term care because they are bedridden or suffering from

dementia or frailty is estimated to be about 2.8 million and is increasing. To address the needs of those requiring long-term care, a long-term nationwide care insurance system was started in April 2000. Long-term health care facilities for the elderly ('Kaigo Rojin Hoken Shisetsu' in Japanese) are among the services this insurance system provides.[1] These intermediate facilities are established to provide residents with both appropriate medical care and assistance with the activities of daily living (ADL), and to facilitate their return home.[2] They

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are equipped with rehabilitation equipment and a trained staff. The elderly eligible for residence in these facilities are in a stable medical condition and do not require acute medical treatment; their main requirement is assistance with ADL. Rehabilitation improves their ADL skills, and they are able to return home with or without in-home services. To obtain beneficial outcomes for residents in these facilities in Japan, clear target criteria of care must be established. However, these criteria have not yet been fully established.

The comprehensive geriatric assessment (CGA) program is a systemic multidimensional approach to improving quality of life and planning care for frail elderly. Many reports, including controlled trials, have supported the many benefits of a CGA program for improving living location, functional status and risk of hospitalization and mortality.[3-5] Such programs have been increasingly introduced in hospitals, care facilities, and in-home care in Japan.

The purpose of the present study was to clarify the target criteria of care in long-term health care facilities in Japan. We investigated (i) evaluation of one-year changes in CGA scales in long-term care health facilities in Japan and (ii) which CGA scales are suitable for predicting residents' basic ADL (BADL) after 1 year.

Methods

Participants

Subjects in this study were elderly residents in a long-term care facility in Nagoya City, Japan. All participants provided oral informed consent prior to participating in the study. We attempted to perform a comprehensive geriatric assessment of each participant. Finally, the subject group included 54 residents (14 men and 40 women, mean age 82.5 years) who had completed a CGA for 2 consecutive years.

Measurements

In the spring of 2000 and 2001, all of the residents except those who could not communicate underwent CGA. The CGA scales analyzed in this study were as follows: the Barthel index (BI) of basic ADL,[6] the Lawton scale of instrumental ADL (IADL),[7] the mini-mental state examination (MMSE) for cognitive function and the geriatric depression scale 15 (GDS15) for screening for depression.[8,9] Because the staff in the facility prepares food and does the housekeeping and laundry, a full score on the Lawton scale in this study was five points instead of eight; these three tasks were excepted.

As possible confounding factors, we checked the following: hospitalization history for the study periods, length of each resident's stay in the facility and where he/she was before admission to the facility.

Statistical analyses

Data were analyzed using StatView 5.0 (SAS Institute, Inc., Cary, NC). First, Wilcoxon tests for changes in CGA scores over 1 year were performed. Then, to determine the factors that influenced the change in BADL, univariate logistic regression analyses were performed. In these analyses, the dependent variable was the change in BI, which was described as 'better' or 'unchanged or worse', and the independent variables were age, hospitalization history, length of stay, where he/she had been prior to admission and CGA scale scores in 2000. Of these independent variables, age and length of stay were presented in years and days, respectively. The others were presented as categories of data as described below.

- Hospitalization history during the year (yes or no)
- Where he/she had been prior to admission (hospital or elsewhere (home, other facilities, and so on)
- BI score (< 75 or ≥ 75)
- Lawton scale score(< 3 or ≥ 3)
- MMSE score (< 19 or ≥ 19)
- GDS15 score (< 7 or ≥ 7).

Next, multivariate logistic regression analysis was performed with the independent variables that had shown statistical significance in univariate analyses.

To further estimate the factors that influenced the change in BADL over the period of that year, another logistic regression model was made. Procedures of these analyses were the same as those mentioned above. In this model, the change in BI was a dependent variable, and 10 ADL tasks in BI in 2000, which were divided into two categories of data (i.e. dependent or independent), were used as independent variables.

Statistical significance for all analyses was determined by $P < 0.05$. Statistical tendency was determined by $P < 0.10$.

Results

Subjects' characteristics in 2000

The subject group in this study was comprised of 54 residents who completed the CGA in 2000 and 2001, and included 14 men and 40 women, with a mean age of 82.5 years (Table 1). The number of residents who had a history of hospitalization in the course of that year, the length of stay in the facility, and where he/she had been prior to admission to the facility are also shown in Table 1.

Changes in CGA scores between the years 2000 and 2001

The means and standard deviations of CGA scores in 2000 and 2001 are shown in Table 2. Wilcoxon tests

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were performed to evaluate changes in each pair of CGA scores. On these tests, BI was found to be significantly improved (*P* = 0.007) and Lawton scale significantly lower in 2001 (*P* = 0.029). Neither the MMSE score nor GDS15 score changed significantly between 2000 and 2001 (*P* = 0.730 and 0.404, respectively; Table 2).

Analyses to determine the relationship between change in BADL and CGA score in 2000

To determine the factors that influenced the change in BADL, univariate logistic regression analyses were performed. The dependent and independent variables are described in the Methods section. In these analyses, BI scores less than 75 in 2000 and GDS15 scores seven or above in 2000 were significant variables for improvement in BADL between the beginning and end of the year (*P* = 0.027 and 0.031, odds ratio = 3.64 and 3.46, respectively). Age, length of stay, hospitalization history, Lawton scale and MMSE were not significant variables (Table 3).

Multivariate logistic regression analysis was performed with BI and GDS15, which had been statistically significant in univariate analyses, used as independent variables. In this analysis, BI scores less than 75 approached significance as independent variables (*P* = 0.094, odds ratio = 2.79; Table 4).

Table 1 Subject characteristics in 2000

Number of subjects (male : female)	54 (14 : 40)
Mean age in years (SD)	82.5 (4.7)
Number of residents who had a history of hospitalization during the study year	26
Mean length of stay in the facility in days (SD)	452.8 (233.5)
Location prior to admission	
Acute-care hospital	21
Long-term care medical facilities	9
Long-term care health facilities	3
Their own home	19
Other	2

SD, standard deviation.

Table 2 Changes in comprehensive geriatric assessment scores between the years 2000 and 2001

	2000	2001	*P*-value
Barthel index (/100)	67.5 (25.0)	73.5 (24.0)	0.007
Lawton scale (/5)	2.7 (1.1)	2.3 (1.2)	0.029
Mini-mental state examination (/30)	18.4 (6.7)	18.2 (6.9)	0.730
Geriatric depression scale 15 (/15)	6.5 (3.4)	6.8 (3.4)	0.404

Shown as means (SD). *P*-values were calculated by Wilcoxon test.

Table 3 Univariate logistic regression analyses with change in basic activities of daily living and comprehensive geriatric assessment score in 2000

	Odds ratio	95%CI	*P*-value
Age (year)	1.00	0.89–1.12	0.954
Length of stay in the facility (days)	1.00	1.00–1.00	0.326
Hospitalization history (no)	0.96	0.32–2.93	0.949
Barthel index (< 75 points)	3.64	1.16–11.44	0.027
Lawton scale (≥ three points)	0.36	0.12–1.12	0.078
Mini-mental state examination (≥ 19 points)	0.56	0.19–1.67	0.301
Geriatric depression scale 15 (≥ seven points)	3.46	1.12–10.64	0.031

Odds ratios are shown for improvement in basic activities of daily living between the years 2000 and 2001.
CI, confidence interval.

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Analyses to determine the relationship between change in BADL and BI on each task in 2000

To further estimate the factors that influenced the change in BADL, other univariate logistic regression analyses were performed. In these, the change in BI was a dependent variable and 10 ADL tasks in BI in 2000 were independent variables. Bowel incontinence and urinary incontinence were significantly independent variables ($P < 0.001$, P = 0.011, odds ratio = 11.11, 4.60, respectively) for improvement of BADL (Table 5). Multivariate logistic regression analysis was performed with bowel function and bladder function, which had been statistically significant in univariate analyses, used as independent variables. In this analysis, only bowel incontinence was a significantly independent variable ($P = 0.006$, odds ratio = 10.9)(Table 6).

Discussion

Long-term care health facilities are established to provide residents with both appropriate medical care and assistance with the activities of daily living (ADL), and to facilitate their return home. To this end, it is important to clarify the factors that influence their BADL and target criteria that, if met, can enable them to return home. Improvement of BADL may be influenced by their diseases or their medical status as presented by laboratory data. However, it is worth noting that in general, reliable data is rarely obtained on residents in these facilities. Thus, we chose the CGA scale for use in this study.

In this study, the Lawton scale slightly changed for the worse for the subject group as a whole. The reason this for trend is not clear, but one possible reason is that

Table 4 Multivariate logistic regression analysis

	Odds ratio	95%CI	P-value
Barthel index (< 75 points)	2.79	0.84–9.29	0.094
Geriatric depression scale 15 (≥ seven points)	2.61	0.79–8.55	0.114

Odds ratios are shown for improvement in basic activities of daily living between the years 2000 and 2001.
CI, confidence interval.

Table 5 Univariate logistic regression analyses with change in basic activities of daily living (BADL) and Barthel index (BI) for each task in 2000

	Odds ratio	95%CI	P-value
Feeding (dependent)	0.38	0.03–4.46	0.441
Bathing (dependent)	3.00	0.66–13.57	0.154
Grooming (dependent)	1.52	0.39–5.97	0.547
Dressing (dependent)	1.88	0.60–5.80	0.287
Bowels (dependent)	11.11	2.94–42.06	< 0.001
Bladder (dependent)	4.60	1.42–14.86	0.011
Toilet use (dependent)	0.97	0.32–2.93	0.950
Transfer (dependent)	1.04	0.32–3.38	0.947
Mobility (dependent)	0.90	0.31–2.66	0.854
Stairs (dependent)	1.13	0.34–3.74	0.839

Table 6 Multivariate logistic regression analysis

	Odds ratio	95%CI	P-value
Bowels (dependent)	10.9	2.01–59.23	0.006
Bladder (dependent)	1.03	0.20–5.18	0.974

Odds ratios are shown for improvement in basic activities of daily living between the years 2000 and 2001.
CI, confidence interval.

most residents in these facilities seldom perform some of the tasks on the Lawton scale, such as shopping and handling finances, and their ability to perform these tasks may therefore show a decrease. The Barthel index showed significant improvement between 2000 and 2001. To determine the factors that influence the change in BADL, logistic regression analyses were performed. In these, a BI of less than 75 in 2000 approached significance as an independent variable. In this study, residents unable to communicate were excluded; they often had low BI scores because they were bedridden. Thus, BI score of these study subjects may be relatively higher than that of the other residents. BI scores of less than 75 in this study may represent moderately impaired BADL. On the other hand, for those residents who had BI scores of 75 and above, there may be a ceiling effect. Then, this result is reasonable. However, it is worth showing with data, because long-term care health facilities are intermediate ones and it is important to identify residents for whom rehabilitation will be effective .

On the other hand, the steps of BI may be rough and this index may be not sufficiently sensitive to small changes for residents with high BI scores. Harwood *et al.* reported the limited applicability of BI for day-hospital attendance.[10] Though this result indicates that residents with moderate impairment in BI tend to improve in BI after a year, it does not exclude the effects of rehabilitation on residents with high BI scores.

Moderate impairment in BI in 2000 approached significance, not definite significance, as an independent variable. We suspect that this index is not sufficiently sensitive to predict a one-year outcome because BI consists of so many different tasks. Thus, logistic regression analyses with each task in BI in 2000 and change of BI for a year were performed. Bowel incontinence was a significant independent variable in multivariate analysis. One notable finding in this study was that bowel incontinence was a positive factor for improving BADL in this facility after a year. In univariate analysis, bladder function was also significant, though it was not significant in multivariate analysis. This may be due to the multicolinearity of these two variables; because urinary incontinence and bowel incontinence had a strong correlation ($r = 0.75$) in this study (data not shown). Therefore, excretory functions of both urination and defecation, not only defecation, are likely factors that influence BI score after a year. Cho *et al.* reported that urinary incontinence was associated with significant declines in BADL after three years in community-dwelling elderly.[11] The reason for this discrepancy is unclear. One possible explanation is that anxiety about incontinence causes patients to decrease activities in their community and home, and that once the staff provides assistance and instruction – rehabilitation – in this regard, improvement in BADL occurs. On the other hand,

Umegaki *et al.* reported that bowel incontinence in elderly patients in a university hospital in Japan was related to the facilities' administration after discharge from the hospital.[12] Long-term health care facilities are established to provide residents with assistance with ADL and to facilitate their return home. According to our report and the report by Umegaki *et al.*, it is reasonable that elderly with bowel incontinence habits are especially eligible for residence in these facilities in Japan.

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Influence of behavioral and psychological symptoms of dementia (BPSD) and environment of care on caregivers' burden

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Abstract

With increasing population of older adults in need of care, caregiver's burden is becoming a major concern. We investigated the relative contributions of BPSD of care recipients, caregiver's background and the care environment to caregiver's burden assessed by using Zarit burden interview (ZBI). Among BPSD, inability of finding the way home, inability of managing money and fecal incontinence were the most difficult symptoms to cope with. A path analysis, by which we constructed a network model to clarify the contributions of the factors examined to the caregiver's burden, indicated that the severity of dementia, the feeling of "would rather die than be in the same condition" and the physical pain of the caregivers showed great direct influences on the score of the ZBI. In conclusion, we clarified kinetic and dynamic interactions of factors affecting caregiver's burden by using a path analysis. The model indicates that the caregiver's burden can be affected not merely by the illness of the care recipients but by the caregiver's background and the care environment.
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Keywords: Care burden; Path analysis; Behavioral and psychological symptoms of dementia (BPSD)

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1. Introduction

The proportion of the population made up of individuals aged 65 and older in Japan exceeded 19.0% in 2003 (MHLW, 2003). Among the elderly population, 13% were estimated to be in need of care due to their physical or mental disabilities (MHLW, 2000). According to the MHLW (2001), 71.1% of elderly care recipients who live at home are receiving care primarily from their family members. The Japanese government launched public long-term care insurance in the year 2000, with an aim of providing care recipients with the relevant care services according to their level of disability. Because the present system for evaluating the level of disability is still in its developmental stage, further revisions are required with particular reference to the adequate assessment of dementia and related behavioral disturbances, which must be reflected in the evaluation of relevant care needs. Previous reports have demonstrated an association between the caregiver's burden and both the BPSD and the care environment, but how these factors contribute to the increase of the caregiver's burden remains to be clarified. Because the caregiver's burden is a multi-layered phenomenon involving various factors on both sides (care recipients and caregivers), clarification of the complicated relationship between these factors and the caregiver's burden should lead to a better understanding of how the burden increases, and thus of what interventions might help to reduce it.

In this study, in an attempt to clarify the structure of the caregiver's burden and how it develops, we here applied a network model using path analysis.

2. Subjects and methods

2.1. Subjects

A total of 116 caregivers of elderly patients were enrolled in this study. All patients were care recipients who either attended the geriatric outpatient of the Nagoya University Hospital or used in-home care services from community service providers. Written informed consent was obtained from all participants.

2.2. Measurements

A structured questionnaire was handed or sent to the caregivers of the care recipients. The questionnaire asked about the care recipient's and caregiver's background, clinical conditions, care environment, familial and economic status, and the caregiver's burden was sent to each of the caregivers. The severities of physical disability and dementia were evaluated according to the criteria shown in Tables 1 and 2. These criteria are normally used for evaluating the level of disability when care recipients apply for services provided for by the public long-term care insurance policy. Respondents were also queried in regard to the types of services provided and the presence or absence of an intimate counselor and an alternative caregiver. In addition, the caregivers were asked whether or not they had to relocate in order to provide care, whether the demands of providing care had forced them to

Table 1
Criteria of the severity of physical disability

1	Almost independent in daily living despite some disabilities and able to go out of home by self, going out of home by self using public transportation
2	Almost independent in daily living despite some disabilities and able to go out of home by self, going out of home by self within neighborhood
3	Almost independent in domestic daily living but unable to go out of home without assistance, spending most of day time out of bed and able to go out of home with assistance
4	Almost independent in domestic daily living but unable to go out of home without assistance, spending a considerable day time in bed and seldom go out of home
5	Spending most of day time in bed and require any assistance in daily activities but able to keep sitting position, able to move to a wheel chair from bed and do eating and toiletting out of bed
6	Spending most of day time in bed and require any assistance in daily activities but able to keep sitting position, require assistance to move to a wheel chair
7	Bed ridden all the time and require assistance for toiletting, eating and dressing, unable to roll over without assistance
8	Bed ridden all the time and require assistance for toiletting, eating and dressing, unable to roll over without assistance

quit their job, whether they found their role rewarding, and whether they ever took time off from providing care.

The BPSD of the patients were assessed using an original list (Table 3). The lists consisted of 18 symptoms (nos. 1–18) included in the primary assessment dataset of the public long-term care insurance and 17 symptoms (nos. 19–35) selected from the lists applied in previous studies (Sanford, 1975; Greene et al., 1982; Baumgarten et al., 1990). For each applicable symptom, the caregivers were asked to rate the degree of difficulty in coping with the symptom by providing a score ranging from 0 (none) to 10 (very severe).

The caregiver's burden was assessed by the Zarit burden interview (ZBI) (Zarit et al., 1980). The ZBI has 21 questions with four choices for each item, and the total score (full score: 84) was used for the analyses. We also asked the caregivers to self-rate their overall sense of burden and life satisfaction on a scale of 0 (extremely low) to 100 (extremely high).

Table 2
Criteria of the severity of dementia

0	Not demented
1	Almost independent both domestically and socially despite some dementia symptoms
2	Hampered in daily living with mental symptoms, abnormal behaviors and communication disorders, but barely maintain independence with close supervision by others
3	In constant need for assistance because of incapacity due to mental symptoms, abnormal behaviors and communication disorders. Problematic symptomes or behaviors are observed
4	Incapacitated in daily living with frequent mental symptoms, abnormal behaviors and communication disorders, and unable to maintain independence without assistance by others
5	In need of specialized medical care because of extreme mental disorders, problematic behaviors or severe physical ailments persistent manifestation of psychiatric symptomes such as delirium, delusion, agitation, or self-inflicting injury

Table 3
The list of BPSD

1	Delusion of being robbed
2	Confabulation or spread around
3	Hallucination
4	Changeable mood
5	Sleep disturbance
6	Verbal and non-verbal abuse
7	Repeated story
8	Loud voice
9	Resistant to care
10	Wandering
11	Restlessness
12	Inability in finding the way home
13	Request to go home
14	Hording useless things
15	Inability of managing the hot things
16	Destroying property
17	Filthy behavior
18	Allotriophagy
19	Confusion between present and past
20	Misrecognition for family
21	Misrecognition of acquaintance
22	Inability of managing money
23	Inappropriate sexual behavior
24	Hiding things
25	Compulsive behavior
26	Misinterpretation for caregivers' contact
27	Hanging around persistently, repetitive question
28	Disturbing conversation
29	Waking caregiver up
30	In need to be watched out
31	Reduction of interest
32	Appears unhappy or depressed
33	Abnormal appetite
34	Urinary incontinence
35	Fecal incontinence

In addition to the above assessment of caregiver's burden, with an aim to clarify relative contributions of caregiver's feeling to the burden, two questions asking a sense of loss as the care recipient's cognition declines and whether or not he/she would rather die than be in the same condition were included in the questionnaire. Also, a covert wish if the care recipient would disappear and a latent desire for dying to escape from the burden were asked.

2.3. Statistics

Pearson's correlation coefficients (r) were calculated for parametric data and Spearman's rank of order correlation coefficients (ρ) were calculated for non-parametric data. We used the chi-square test with Yates correction, and Fisher's exact test for

categorical comparisons of the data. Differences in the means of continuous measurements among the groups were tested using the Student's *t*-test and one-way analysis of variance (ANOVA). Tukey's test was performed for multiple comparisons when ANOVA showed a significant difference. The internal consistency of the ZBI was calculated by Cronbach's alpha. Multiple regression analysis, using the step-wise method with the variables of significant measures detected in the univariate analyses, was conducted to identify the factors contributing to the ZBI. Patients whose relevant data was missing were excluded from the multivariate analysis. To clarify the process by which the caregiver's burden develops, a path analysis was performed for the variables which had a significant relationship with the ZBI, using multiple regression method as described by Munro (2001) and Polit (1996). Path analysis is an extension of the regression model, used to test the fitness of the correlation matrix. A *p*-value of <0.05 was considered to indicate statistical significance; all tests were two-tailed. All statistical analyses were performed on a personal computer with the statistical package SPSS 11.0 and Amos 4.02 for Windows (SPSS Inc., Chicago, IL).

3. Results

3.1. Attributes of the care recipients

Seventy-four percent of the care recipients were female. The mean age of the recipients was 79.8 ± 9.1 years (here and in all other cases ± S.D.), and the mean duration of receiving care was 46.6 ± 42.1 months. The numbers of cohabitants were: none (6.4%), one (14.7%) and more than two (78.9%). The mean severity of physical disability was 3.2 ± 2.0, and the mean severity of dementia was 2.0 ± 1.3. A majority (94.4%) of all the care recipients surveyed used some care services as follows: day service (73.8%), respite care (25.2%), home visit care (25.2%), use of supporting instruments of care (21.5%), home visit nursing (10.3%), home visit by physician (8.4%), bathing service (3.7%), home visit dentistry (2.6%) and in-home rehabilitation (0.9%).

3.2. Attributes of the caregivers and the care environments

A majority (84%) of the caregivers were female. The caregivers' relationships to the care recipients were: spouse (30.4%), daughter (30.4%), daughter-in-law (27.8%), son (8.7%) and others (2.6%). The mean age of the caregivers was 60.8 ± 11.5 months and the duration of providing care was 45.3 ± 42.2 months. A majority (79.3%) of the caregivers experienced some physical pain of their own, and many of them had to either retire from their work (19.5%) or change their residence for care (13.2%). Meanwhile, 27.2% of the caregivers answered "poor" or "mildly poor" to the question about a premorbid interpersonal relationship with the care recipients. Seventy-eight percent of caregivers had an intimate counselor, and 56% of them had an alternative caregiver. The caregivers found their roles rewarding at the following rates: always, 4.5%; often, 4.5%; sometimes, 28.2%; rarely, 24.5%; none, 38.2%. The frequencies of physical pain felt by the caregivers were: always, 22.1%; often, 8.0%; sometimes, 30.1%; rarely, 18.6%; never, 21.2%. The

frequency of respite from the care was: more than once a week, 41.1%; a few times per month, 23.4%; never, 35.5%.

Twenty-five percent of the caregivers had a strong sense of loss due to the deterioration of cognitive function of the care recipient, and 46.0% of them thought they would rather die if they were in the same status as the care recipient.

3.3. The BPSD

Fig. 1 shows the frequencies of observed BPSD and the difficulties in coping with the BPSD. The mean number of BPSD reported by the caregivers was 11.7 ± 7.9. The mean of the cumulative score of difficulties was 63.5 ± 52.1.
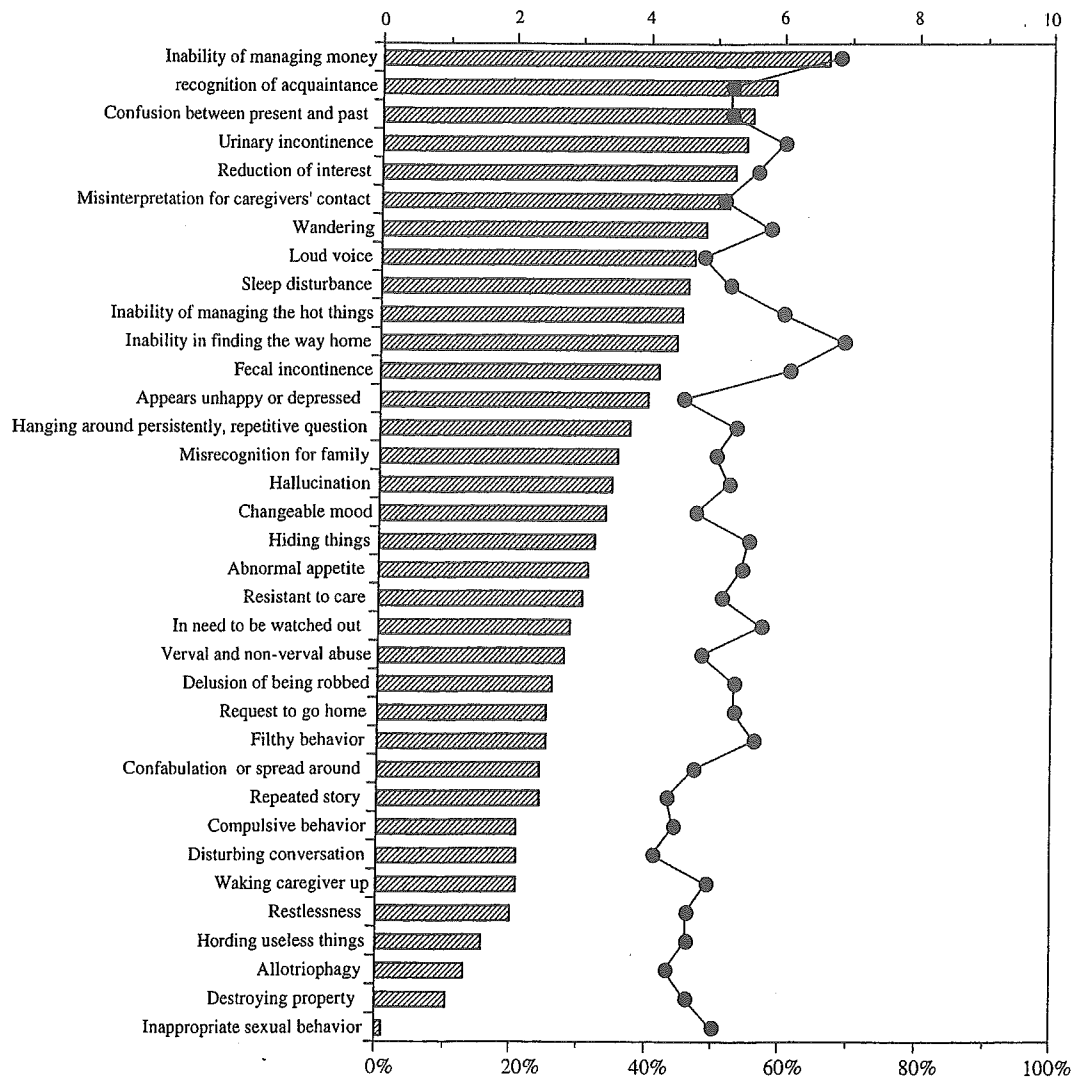

Fig. 1. The frequency of BPSD to be observed, and the difficulties of coping with each symptom. The horizontal bar chart shows the frequencies of BPSD to be observed, and the kinked line shows the difficulties to cope with the symptoms.

3.4. Caregivers' burden

The mean ZBI score was 35.3 ± 15.6. The reliability was high, with a Cronbach's α of 0.915, and the alpha was also high ($\alpha = 0.918$) when it was calculated only for the care recipients with dementia. The overall burden score was 56.6 ± 25.8, and the score was strongly correlated with the ZBI score ($r = 0.623$, $p < 0.001$). When the subjects were limited to the care recipients with dementia, Cronbach's α of the ZBI score remained high, with $\alpha = 0.918$, and the ZBI score was also strongly correlated with the burden score with an r of 0.528 ($p < 0.001$).

The severity of dementia was related with the ZBI ($r = 0.334$, $p = 0.003$), but it did not have a significant association with the burden score ($r = 0.154$, $p = 0.163$). Meanwhile, the severity of physical disability showed no significant correlation with the ZBI or the burden score.

The ZBI and the burden score were significantly associated with the duration of care (ZBI: $r = 0.223$, $p = 0.021$; burden score: $r = 0.219$, $p = 0.018$, respectively), the presence of an intimate counselor ($t = -3.685$, $p < 0.001$; $t = -2.179$, $p = 0.024$), and the frequency of physical pain in the caregivers ($\rho = -0.311$, $p = 0.001$; $\rho = 0.293$, $p = 0.002$). The presence of an alternative caregiver made the burden score slightly higher ($t = -1.988$, $p = 0.049$), but did not affect the ZBI ($t = -1.581$, $p = 0.117$). No significant difference of the ZBI or the burden score was seen depending on the caregiver's gender, age or economic status. There was no significant difference of the ZBI or the burden score depending on a familial relationship. The ZBI and the burden score were the highest if the caregiver was daughter-in-law (mean ZBI score: 38.1 ± 13.8, mean burden score: 65.0 ± 23.6, respectively). The premorbid interpersonal relationship between the caregiver and the care recipient was not significantly related with the ZBI score ($\rho = 0.034$; $p = 0.730$) or the burden score ($\rho = -0.170$; $p = 0.071$).

Multiple regression analysis for the ZBI showed that the significant variables were the severity of dementia (standardized $\beta = 0.740$), the presence of an intimate counselor (standardized $\beta = 0.289$), and the BPSD of disturbing conversation (standardized $\beta = 0.294$), appears unhappy or depressed (standardized $\beta = 0.304$) and urinary incontinence (standardized $\beta = 0.205$) with an adjusted R^2 of 0.401.

3.5. The influence of burden on the caregivers' mental status

The covert wish if the care recipient should disappear was observed consistently in 5.2% of the caregivers, often in 1.7% of them, sometimes in 17.2%, occasionally in 31.0%, and 44.8% of the caregivers never had the wish. The wish was highly related with the ZBI and the burden score (ZBI: $\rho = 0.431$, $p < 0.001$; burden score: $\rho = 0.391$, $p < 0.001$). The caregivers' latent desire to die in order to escape from the burden was observed consistently in 0.9% of caregivers, often in 2.6% of them, sometimes in 5.3%, occasionally in 17.5%, and 73.7% of them never had the desire. The desire was also related with both the ZBI and the burden score (ZBI: $\rho = 0.442$, $p < 0.001$; burden score: $\rho = 0.396$, $p < 0.001$).

Furthermore, the caregivers' satisfaction score was highly associated with the ZBI and the burden score (ZBI: $r = -0.490$, $p < 0.001$; burden score: $r = -0.343$, $p < 0.001$). The overall satisfaction was related with the presence of an intimate counselor ($p = 0.006$), but
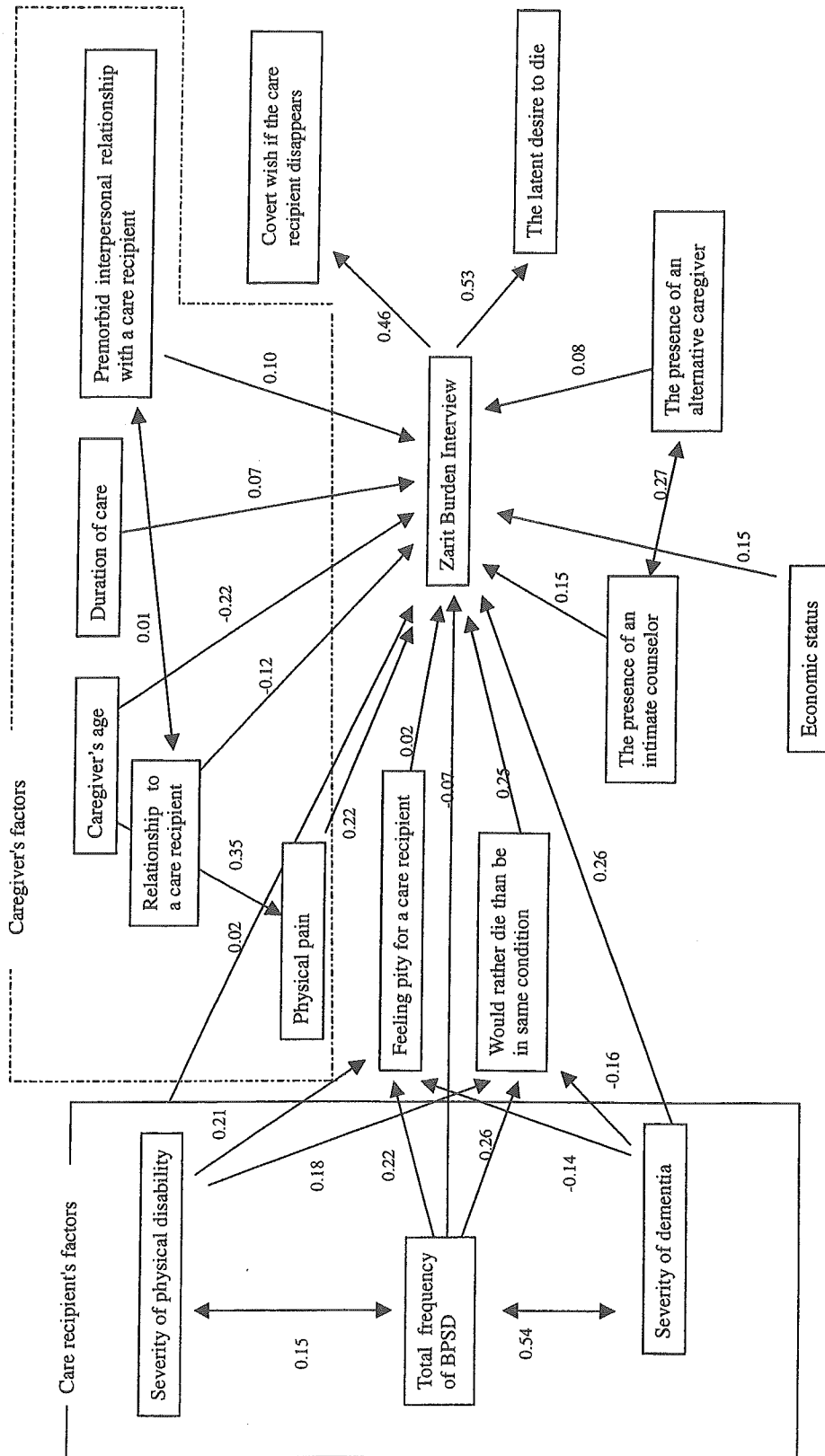
Fig. 2. The path model of the ZBI and the variables. The numbers show the standardized direct effects.

no significant association was found with the age of the caregivers, the relationship, the duration of care, annual income, the presence of an alternative caregiver, the presence of physical pain or the premorbid interpersonal relationship between the caregiver and the care recipient.

3.6. Path analysis (Fig. 2)

A path analysis indicated a significant network model of the relationship around the caregiver's burden, showing an adjusted R^2 of 0.370. The severity of dementia, the sense of "would rather die than be in the same condition" and physical pain of the caregivers showed large direct influences on the score of ZBI. The total frequency of BPSD significantly affected both pity for the care recipients and the sense of "would rather die than be in the same condition", but the burden was significantly influenced only by the sense of "would rather die than be in the same condition".

4. Discussion

In the present study, the ZBI was used to assess the caregivers' burden. The reliability and the validity of ZBI for the Japanese population have already been examined by Arai et al. (1997). However, despite the fact that the ZBI was originally developed for the caregivers of care recipients with dementia, none of the reports had adequately addressed the utility of the interview in assessing caregiver's burden in dementia care.

Caring for a patient suffering from dementia tends to keep caregivers bound at home, thereby increasing the caregiver's burden. The difficulty of coping with such unpredictable patient behavior as sudden tantrums or wandering often distresses the caregiver (Haley, 1997). The strong association of urinary and fecal incontinence with caregivers' burden observed in this study is consistent with previous reports demonstrating that incontinence is a strong predictor for collapse in caregiving at home (Ouslander et al., 1990; etc.). Moreover, the results demonstrated that patients' urinary and fecal incontinence make it difficult for caregivers to continue their regular job or to take time away from caregiving due to the time required for this special care. Hence, it may be essential to pay particular attention to the management of a patient's continence in terms of reducing caregivers' burden. In addition to incontinence, we confirmed strong associations of various BPSD, such as nocturnal delirium, hallucination, interfering with family conversation, and appears unhappy or depressed, with the caregiver's sense of burden.

Pearlin et al. (1990) constructed a model in which the primary stressor can be added to and modified by the care environment and the caregivers' background as secondary stressors. The present study showed that the duration of care, the presence of an intimate counselor, and the presence of physical pain in caregivers were strongly associated with the burden.

In the present study, regression analyses could not construct models with a high, adjusted R^2 for the ZBI and the burden score. But the path analysis indicated a network model with a higher adjusted R^2, which yielded abundant information of the variables involved with care burden. The path analysis showed strong direct effects of severity of

dementia, the sense of "would rather die than be in the same condition", and physical pain on the caregiver. The fact that pity for the care recipient has only little direct effect for the ZBI might suggest that the caregiver's sense of burden stems from concerns of the caregiver's own rather than from his/her compassion for the care recipient. We believe that the network model clarifies the relative involvement and kinetics of various factors influencing the caregiver's burden. In particular, the presence of an intimate counselor to the caregivers and physical pain had substantial impact on caregiver's burden. The overall frequency of BPSD had a significant effect on the caregivers' sense of pity or the desire that they would rather die than be in the same condition. Meanwhile only the feeling that they would rather die than be in the same condition had the largest effect on the caregiver's burden. These results may imply that it is the depreciation of demented care recipients as human, not the sympathy for them that loads the caregivers' mind with the burden.

The caregiver's burden is a complicated concept because it has a multi-layered structure. The structure consists of various factors such as the care recipients' illness, and physical, psychological, and social stress for the caregiver.

In conclusion, the path analysis in the present study revealed the kinetic and dynamic interactions of factors affecting caregiver's burden. The results indicate that caregiver's burden can be affected by physical and psychological status of caregivers, as well as by medical conditions of care recipients. The application of this analytical method may help to establish strategies to reduce caregivers' burden by a better understanding of how the burden develops.

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要介護認定と高齢者総合的機能評価

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KEY WORD

要介護認定
高齢者総合的機能評価
新予防給付

POINT

■ 要介護認定と高齢者総合的機能評価は共有部分とそうでないところがある.
■ 要介護認定は政策的に決定され, 今後変更される.
■ 高齢者総合的機能評価は QOL の評価や患者へのフィードバックを行っていく必要がある.

はじめに

　要介護認定は介護保険の日本への導入に伴い, 政策的に介護サービスの支給限度額を決める目的で導入され, 要介護度とは介護の手間を反映する指標として定義された. 要介護度をコンピュータを用いて定量化する試みは画期的であったが, 一方で問題も内包している.

　また高齢者総合的機能評価(CGA)は, もともと高齢者医療の柱として, 医学的診断だけでなく, 高齢者をより全体として(holistic), より包括的に理解するために学問的に確立されてきた. これまでは信頼性や妥当性が検討された ADL, IADL, 抑うつ, 認知機能の指標を用いて定量化している. しかし CGA については, 最近少しずつ考え方が変わってきており, その効果を検証し, 臨床や地域にフィードバックする方向がみられる. そこで本稿では両者の相違点について述べ, その両者の新しい考え方につい

て述べることとする.

これまでの要介護認定の考え方

　要介護認定は支給限度額を設定するために, 高齢者施設において, ケアコードに沿って実際のケア時間を測定(タイムスタディ)を行うことで, ケアを介護時間として定量化したものである. 一次判定の現状としてはコンピュータの一次判定の結果, 要介護度が在宅高齢者の状態像や認知症高齢者像と乖離しているという指摘も以前あった.

　要介護度は, 介護に必要な時間推計から判定される. 具体的には, ①直接生活介助(入浴や食事の介助など), ②間接生活介助(洗濯や食事の準備, 後始末など日常生活上の世話), ③機能訓練関連行為(嚥下訓練, 歩行訓練など), ④医療関連行為(呼吸管理, 褥瘡の処置など診療の補助), ⑤問題行動関連介助(徘徊や暴力, 不潔行為などへの対応)の各項目に対して, 必要と認められる１日当たりの時間を算出した調査「１分間タイムスタディ」の結果を用いている.

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表1 要介護認定と高齢者総合的機能評価(CGA)の比較

認定調査の下位項目	CGA の各スケール
①直接生活介助(入浴や食事の介助など)	Barthel Index
②間接生活介助(洗濯や食事の準備, 後始末など日常生活上の世話)	Lawton Scale
③機能訓練関連行為(嚥下訓練, 歩行訓練など)	Barthel Index
④医療関連行為(呼吸管理, 褥瘡の処置など診療の補助)	N/A
⑤問題行動関連介助(徘徊や暴力, 不潔行為などへの対応)	N/A
⑥抑うつ気分 N/A	抑うつの評価
⑦認知症 N/A	認知症の評価
⑧QOL N/A	QOL の評価

この調査は1994年, 3,404人の施設入所者を対象として行われた. 医療依存度を加味するために1998年度から新設された「特別な医療」の各項目については, 判定の基となるタイムスタディのデータがないため, ④の医療関連行為について時間を延長して調整される.

当初, いわゆる動ける痴呆の要介護認定が軽く出るのではないかといわれ, 開始から3年後には見直しがなされた. その結果, 現在は認定そのものの苦情はほとんどみられず, 要支援で施設介護を受けれることができないときや, 介護サービスをより多く利用したいときに低く出るなどの問題がときどき存在するが, 要介護認定そのものの苦情ではない.

要介護認定審査会に期待すること

要介護認定審査会は介護保険の柱ともいえる. 医師にとって, かなりの負担が強いられているが, 介護保険を支えているのは献身的に参加している医師や認定審査会委員である. そこでの課題が上に反映される仕組みになっていないのは, システム上の課題でもある. 一次判定の結果を基に, 認定調査結果と主治医意見書から要介護度をイメージし, 変更する場合としない場合に判断していく過程は重要である. 日内変動や日によって症状が異なる「まだら痴呆」のような場合には, 主治医意見書が重要である. 認知症の診断で最も重要なことは, せん妄やうつ病, 甲状腺機能低下症などとの鑑別である. 多彩な精神症状がある場合には, 判断が困難な場合もある. コンピュータソフトによる一次判定だけでなく, 特記事項や主治医意見書からの病状の読み取りが重要である. そこで日頃からCGAに馴染んでいれば, 判断が下しやすい.

新しい高齢者総合的機能評価について

CGAとは高齢者を医学的な側面からより理解するために作られたもので, 要介護認定とは似ているようで, 別のものをみている. 表1にその比較を示した. この表からいえることは, CGAはADL, IADL, 家庭や社会背景についてはほぼ同じものを, より医学的側面からみており, 特に抑うつ気分, 認知機能を簡単なスケールを用いて定量化しているということである[1]. つまり要介護度は, ADL, IADLについてはCGAと部分的に相関するが, 利用される場が異なるため, 比較そのものは意味がない.

しかし高齢者を異なる視点で鑑別することは, それなりに重要である. またCGAの結果を基にカンファレンスを開催し, 高齢患者の情報の共通化と情報交換が重要である. チーム医療の基となるのがCGAであり, この2つは欠かせないものである. さらにバージョンアップするためには, QOL評価の導入とその応用, そして患者へのフィードバックが必要である.

要介護者とCGAについては, レーダーチャートを用いた分類方法が峯廻らによるレポートに詳しい[2]. つまり, 脳血管障害とアルツハイマー病, パーキンソン病などの病気による特徴を, ADL, nutrition, complication, risk factor,
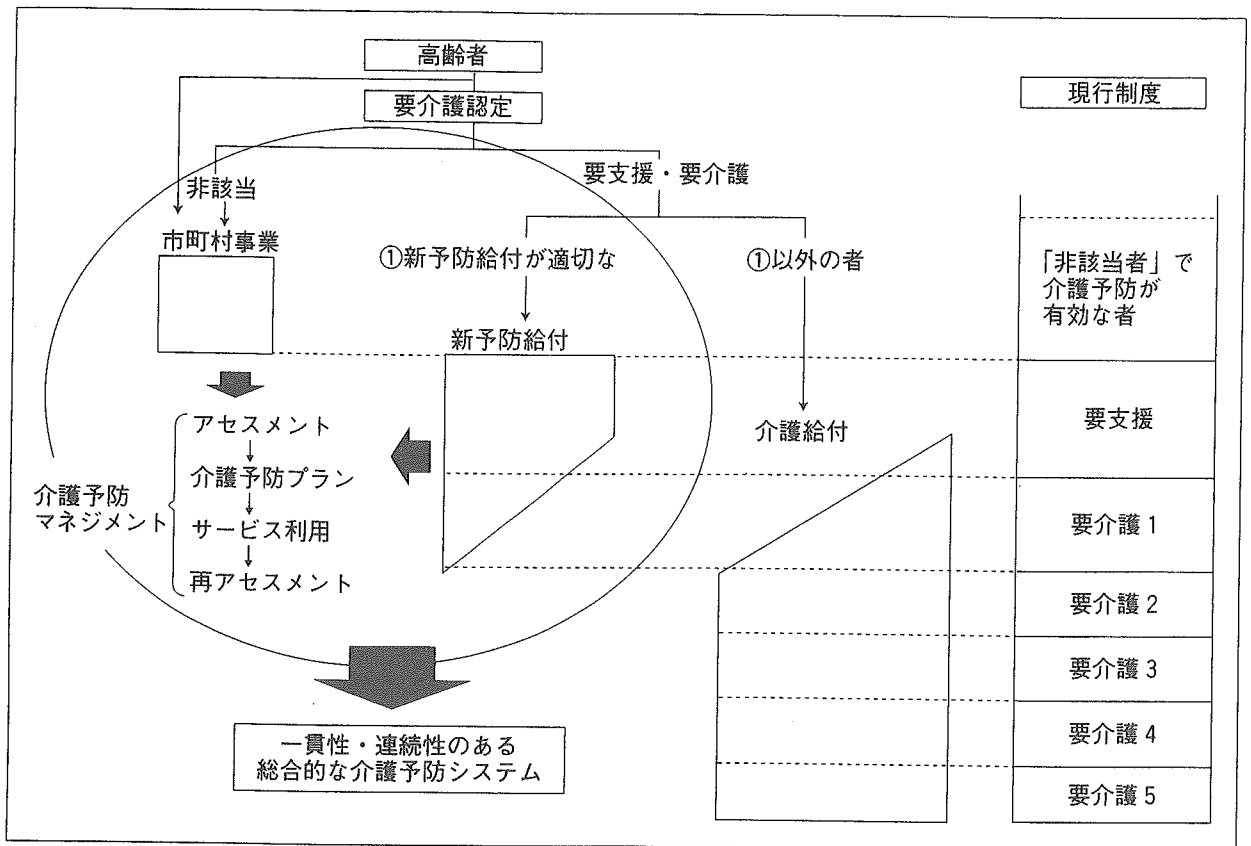
図1　総合的な介護予防システムの確立

social, mental の6つに分析してレーダーチャートにすると，病気の特徴，要介護高齢者の個人の特徴が明確にできるというものである．医療や介護へのアプローチとして興味深い．

新予防給付について

　新予防給付とは平成17年の介護保険改正の目玉として，要支援者の予防給付と要介護者の介護給付の一部を再編成し，対象者や給付内容を見直した新予防給付を創設されるものである．現行の「要支援」と「要介護1」について要介護認定の手続きのときに，一体的にアセスメントを行い，対象者を選定し，個別に作成した「予防給付プラン」に基づいてサービスを利用するというものである（**図1**）[3]．また，予防給付のメニューとなる可能性がある介護予防プログラムには，筋力トレーニングや低栄養，口腔ケアなどが含まれる．

さらに新しい要介護認定に向けて

　さらに新しい要介護認定の方向としては，障害者（身体障害者，知的障害者，精神障害者）への要介護認定の妥当性の検討である．現行の要介護認定基準は，介護保険で給付される介護サービス，身体介護（やそれに伴う見守り）など，グランドデザインでいえば介護給付に相当するサービスの必要度を測定する上では，障害者においても有効であった．ただし，障害者に対する支援においては，自立を目的とした機能訓練や生活訓練，就労支援などが重要であるが，これらの支援については，介護保険で給付される介護サービスとは必要性を判定するロジックが異なると考えられ，現行の要介護認定基準とは別の考え方が必要と考えられる．また，もし非保険者の年齢の見直しがなされるとすれば，乳幼児に対する要介護認定も今後の課題である．

おわりに

　要介護認定と高齢者総合的機能評価は要介護高齢者を分析，分類する方法としては似ているが，そもそも比較は困難である．それぞれの機能が異なるために，利用方法も異なるものと考えている．しかし両者ともより簡便で，より良いものに改善していく過程が重要であり，今後も変化していく必要がある．

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認知症ケアの標準化をめざす 「センター方式」って何ですか?

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POINT 1

認知症ケアの方針や内容を統一し、どの施設や職員間でも共通の方法と仕組みを使えるようにしたのが「センター方式」で、A〜E群のアセスメント・シートからなる。

POINT 2

2004年に「センター方式」についての調査が行われ、全国の事業所などのうち約4分の3で、その有用性が認められた。

POINT 3

「新しい認知症ケア」には、認知症をもつ人との「共生の姿勢」が求められる。

認知症ケアの現状は?

2003年6月に厚生労働省から出された「2015年の高齢者介護」報告で、これまでの介護保険利用者の分析により、「身体ケアモデルから痴呆ケアモデルへの転換」と「痴呆ケアの普遍化、標準化」が目標とされました。その答申を受ける形で介護保険の一部改正が行われ、2006年4月以降に実施されようとしています。

それに先がけ、国が第一に行ったのが、2004年12月より「痴呆」という用語を「認知症」という新呼称に改めたことです。厚生労働省により学識経験者の意見を踏まえて決定され、一般用語や行政用語の場合に用いることとされています。

用語が変わることで、認知症の印象や概念も変わります。その中心の1つとなるのが、「認知症のケアマネジメントの確立」です。そこで、認知症介護研究・研修東京センターが中心となり、現場を中心にアセスメント・シートが作成されました。それが、いわゆる「認知症高齢者ケアマネジメントセンター方式シート」(略称:センター方式)といわれるものです[1]。

高齢者の増加に伴い認知症をもつ人も急激に増加し、超高齢社会において認知症のケアは避けて通れません。しかし、これまでは認知症を的確にアセスメントする方法や専用のサービスがなく、認知症ケアの提供は十分ではなかったといえるでしょう。

そのため、認知症ケアに際して今後この「センター方式」が、在宅であれ、施設であれ、政策的にも広く利用されるようになると思われます。

「センター方式」とは? (図1)

介護保険では、サービスの質を確保するための共通方法として、ケアマネジメント・システムが導入されました。それは、利用者の暮らしとケアの課題を見きわめ(＝アセスメント)、課題解決のための計画(＝ケアプラン)を作り、実践の結

図1 これまでの認知症ケアの問題点と「センター方式」の利点

これまでの認知症ケアの問題点	「センター方式」の利点
ケア関係者が各自まちまちの方法で取り組んでいたため、ケアの方針や内容がサービス事業所や職員の間でバラバラになってしまい、十分なケアの成果を得られない。また、本人や家族が混乱を強めてしまう	「センター方式」のケアマネジメントシートは、ケア関係者が共通の方法と仕組みで一緒に使うことができる

Illustration:Kumi Terada