services. There are two types of services covered by LTCI: community-based services and institutional services. Community-based services include various programs such as the home-help service, visiting bathing service, visiting rehabilitation, day care (rehabilitation), visiting nurse service, assistive device leasing, short stays (temporary stays at nursing facilities), in-home medical care, and care management services, care services provided by for-profit private homes, and allowance for the purchase of assistive devices and home renovation. In theory, the applicant can choose any certified providers and listed services.

In practice, a major role is played by a "care manager," a licensed professional who has passed an examination and undergone brief training, who draws up a care plan and a weekly schedule of service provision for individual seniors. It is essential that the care plan must be approved by the client or the client's family, and new care managers can be requested at any time if care plans prove inadequate. The maximum amount of reimbursement in the LTCI system is capped according to the care level.[3,4] Elderly beneficiaries pay a 10% co-payment for services received.

The aims of LTCI home care programs are to reduce the care burden of caregivers, maintain and improve the functional abilities and well-being of elderly people, and decrease the use of institutional care services and mortality. However, there is little evidence of how community-based services affect care recipients' outcomes, the subjective burden of caregivers or reduce the use of institutional care services.

The Nagoya Longitudinal Study for Frail Elderly (NLS-FE) compares outcomes of the use of different care services provided by the LTCI program; it was designed to provide a structured comparison of services and a comprehensive standardized assessment instrument.[5,6] Day-care service, which includes "day care" and "day rehabilitation," is provided in designated centers and is one of the major LTCI community-based services. Day-care service is a facility-based daytime program of nursing care, rehabilitation therapies, supervision and socialization that enables frail, older people, who are in poor overall health and have multiple comorbidities and varying physical or mental impairments, to remain active in the community. The individual visits the facility once or several times a week and then returns to his or her own home.

Although one of the aims of day-care service is to minimize or delay the possibility of institutionalization and maximize the potential for care recipients to maintain an independent life in the community, only a limited number of studies have examined the impact of day-care service on long-term care (LTC) placement among community-dwelling older adults. Moreover, most of these studies have targeted patients with dementia. Previous studies targeting dementia have

demonstrated that day-care use is associated with nursing home placement in persons with Alzheimer's disease.[7,8] However, the effect of using day-care service on the LTC placement of community-dwelling, frail elderly with various chronic diseases remains unknown, although it has been reported that day-care services reduce caregiving time and provide respite to caregivers.[9,10]

In the present prospective cohort study using the NLS-FE cohort, we examined whether day-care service use among community-dwelling older people using various community-based services under LTCI in Japan influenced LTC placement during a 36-month follow-up period. Analysis of LTC placement over the 36-month was conducted using Kaplan–Meier curves and multivariate Cox proportional hazards models.

Methods

Subjects

The present study employed baseline data of the participants in the NLS-FE and data on the mortality of these patients during the 36-month follow-up. Details of participants and the NLS-FE have been published elsewhere.[5,6] The study population initially consisted of 1875 community-dwelling dependent elderly (632 men and 1243 women, age 65 years or older) who were eligible for LTCI, lived in Nagoya City and received various home care services from the Nagoya City Health Care Service Foundation for Older People, which has 17 visiting nursing stations associated with care-managing centers. These NLS-FE participants, who were enrolled between 1 December 2003 and 31 January 2004, were scheduled to undergo comprehensive in-home assessments by trained nurses at the baseline and at 6, 12, 24, and 36 months. At 3-month intervals, data were collected about any events participants experienced, including admission to the hospital, LTC admission and mortality. Per the procedures approved by the institutional review board of Nagoya University Graduate School of Medicine, participants provided written informed consent and, for those with substantial cognitive impairment, a surrogate (usually the closest relative or legal guardian) or family caregivers provided it.

Data collection

Data were collected from standardized interviews with patients or surrogates and caregivers conducted at clients' homes and from care-managing center records by trained nurses. The data included clients' demographic information, depressive symptoms as assessed by the short version of the Geriatric Depression Scale (GDS-15),[11] and a rating for the seven basic activities of daily living (ADL) (feeding, bathing, grooming, dressing, using the toilet, walking, and transferring) using

summary scores ranging from 0 (total disability) to 20 (no disability).[12] The interview with participants also included questions about using care services, including day-care service, which includes day care and day rehabilitation, visiting nurse service, and home-help service programs, as well as medical services. In addition, the weekly frequency with which clients used these services was obtained.

Information obtained from care-managing center records included data on the following physician-diagnosed chronic conditions: ischemic heart disease, congestive heart failure, cerebrovascular disease, diabetes mellitus, dementia, cancer, and other diseases comprising the Charlson comorbidity index,[13] which represents the sum of a weighted index that takes into account the number and seriousness of preexisting comorbid conditions.

Data were also obtained from caregivers concerning their own personal demographic characteristics and their subjective burden as assessed by the Japanese version of the Zarit Burden Interview (ZBI),[14] which is a 22-item self-report inventory that examines the burden associated with functional behavioral impairments in the home care situation.

For the analysis, 136 of the original 1875 participants were excluded because of missing data regarding service use or confounding/intermediary variables, leaving 1739 in the analysis. Of these 1739 participants, 412 could not complete the GDS-15 because of severe cognitive impairment or communication impairment. Also, among the 1739 older participants, 1442 participants had primary caregivers. Of these 1442 caregivers, 289 could not or refused to complete the ZBI.

We defined three types of care facilities providing LTCI as LTC facilities: nursing homes, care health facilities for the elderly, and group homes for elders with dementia. We assessed LTC placement over 36 months using event reports at 3-month intervals. LTC placement was confirmed by visiting nurses or care-managing center records. Placement time was defined as the number of months (3-month intervals) between the baseline interview and the event report of LTC placement. We censored participants living at home after 36 months of follow-up ($n = 773$), at death ($n = 401$), or at dropout ($n = 248$).

Statistic analysis

The Student's *t*-test and χ^2 test were used to compare differences at baseline between users and nonusers of day-care service. To create ideal model, we first evaluated the association between each covariate and LTC placement using univariate Cox proportional hazards model. LTC placement over 36 months was estimated for each group (day-care service use once or multiple times per week, and nonusers) using the Kaplan-Meier

method. We then evaluated the impact of day-care service use and weekly frequency of service use on the overall model with a series of Cox proportional hazards models, which included gender, age, ADL status, presence or absence of dementia, and caregiver's sex, age and ZBI score. The risk of a variable was expressed as a hazard ratio (HR) with a corresponding 95%CI. All analyses were performed using the SPSS v. 11 (Chicago, IL, USA). $P \leq 0.05$ was considered significant.

Results

When the baseline characteristics were compared between day-care service users and nonusers, older age, a higher Charlson comorbidity index, and a lower GDS-15 score were observed in day-care service users than in nonusers (Table 1). Higher prevalence rates of cerebrovascular disease and dementia were also observed in day-care service users. The rates of nursing service use, home-help service use and living alone among day-care service users were lower than those of nonusers. Among caregivers' variables, the rate of male caregivers was significantly lower for day-care service users than nonusers. Higher ZBI score was detected in users' caregivers.

Among the 1739 participants, 217 participants were institutionalized at LTC facilities during the 36-month follow-up period. A higher rate of LTC placement was observed in day-care service users than in nonusers ($n = 143$, 18.5% vs. $n = 74$, 7.7%, $P < 0.001$) (Table 1). Among the 1327 participants who could complete the GDS-15, 150 participants were institutionalized at LTC facilities during the 36-month follow-up period. Of the 412 who could not perform the GDS-15, 67 were institutionalized at LTC facilities during the 36-month follow-up period. A higher LTC placement rate was observed in the participants who could not complete GDS-15 test than in those who could (16.3% vs. 11.3%, $P = 0.008$). There were no significant differences in LTC placement rate between participants living alone and those living with others (12.8% vs. 12.4%, $P = 0.802$). Furthermore, there was no significant difference in the LTC placement rate between participants living with caregivers who completed the ZBI and those who did not (13.0% vs. 11.1%, $P = 0.375$).

Cox hazard regression and Kaplan-Meier models

Table 2 shows the results of the unadjusted univariate Cox hazard regression analysis, which suggested that LTC placement within the 36-month follow-up period was associated with older age, a lower function of basic ADL, day-care service use, and the presence of dementia (Table 2). Among caregivers' variables, only higher care burden was associated with LTC placement. Figure 1A shows Kaplan-Meier curves exploring the

Table 1 Baseline characteristics of the 1739 care recipients and the 1442 caregivers

	Day-care service		P-value
	User	Nonuser	
Care recipients (n = 1739)			
Men/women (% of men/total)	256/518 (33.1)	319/646 (33.1)	0.994
Age, years (mean, SD)[†]	81.4 (7.7)	80.2 (7.5)	0.002
Basic ADL, range: 0–20 (mean, SD)[†]	13.0 (5.9)	13.5 (6.7)	0.099
Charlson comorbidity index, range: 0–35 (mean, SD)[†]	2.2 (1.5)	1.8 (1.6)	<0.001
GDS-15 (range: 0–15), mean (SD)[†‡]	6.1 (3.6)	6.8 (3.7)	0.002
Chronic diseases (% of total)			
Ischemic heart disease	12.4	12.0	0.809
Congestive heart failure	8.7	8.4	0.845
Cerebrovascular disease	42.8	27.6	<0.001
Diabetes mellitus	12.4	11.7	0.659
Dementia	44.2	22.6	<0.001
Cancer	8.0	10.1	0.142
Visiting nurse service use (% of total)	38.1	54.0	<0.001
Home-help service use (% of total)	42.4	50.5	0.001
Regular medical checkups (% of total)	55.3	60.7	0.023
Living alone (% of total)	17.3	28.1	<0.001
Hospitalization during 36-month follow-up (% of total)	42.5	41.0	0.537
Long-term care placement during 36-month follow-up (% of total)	18.5	7.7	<0.001
Caregiver variables (n = 1442)			
Men/women (% of men/total)	137/553 (19.9)	217/535 (28.9)	<0.001
Age (years), mean (SD)[†]	63.4 (12.3)	64.3 (12.4)	0.177
Relationship to care recipient (% of total)			
Spouse	35.4	42.8	
Child	35.8	37.1	<0.001
Daughter-in-law	25.7	15.4	
Others	3.2	4.7	
ZBI score, range: 0–88 (mean, SD)[†§]	30.1 (16.8)	26.8 (17.0)	0.001

[†]Student's t-test, others were analyzed by χ^2 test (user vs.nonuser). [‡]GDS-15, geriatric depression scale, n = 1327. [§]ZBI, the Zarit Burden Interview. n = 1153.

association between weekly frequency of day-care service use and time to LTC placement (3-month intervals). The risk of LTC placement was higher for participants who used day-care service more frequently than those who used it less frequently.

Table 3 shows the results of the series of Cox proportional hazards models that examine the HR of day-care service use to LTC placement during the 36-month follow-up period. The sequential adjustment had minor influences on the association between day-care service use and LTC placement during the 36-month follow-up period. The HR for the fully adjusted models was 2.34 (95%CI = 1.60–3.41).

In the Cox regression model adjusted for potential confounders, participants with more frequent use of day-care service had a significantly higher relative HR than participants with less frequent use of the service (Fig. 1B). Although there was no significant association between using day-care service once per week and the risk of LTC placement, participants using a day-care service two or more times per week had a significantly higher relative HR than participants not using the service.

Discussion

In the present study we demonstrated that day-care service use was associated with LTC placement during the 36-month study period among community-dwelling frail elderly using various community-based services under the LTCI program in Japan. Many previous studies have examined predictors of LTC placement in study samples, but these have been limited to people with dementia and there have been fewer evaluations of risk factors for LTC placement in community samples.[15-19] Few studies have comprehensively investigated how both caregiver and recipient characteristics influence LTC placement.[19] Previous observations

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Table 2 Univariate Cox proportional hazards model to identify predictors of long-term care placement over 36 months

Variable	Univariate HR[†]	95% CI	*P*-value
Care recipients (*n* = 1739)			
Men (vs. women)	0.75	0.56–1.02	0.067
Age (continuous)	1.04	1.03–1.06	<0.001
Living with someone (vs. living alone)	1.02	0.74–1.39	0.920
Basic ADL (range: 0–20) (continuous)	0.97	0.95–0.99	0.001
Regular medical checkups per month (no regular checkup)	1.19	0.90–1.56	0.214
Formal care use (vs. nonuse)			
Visiting nurse	1.15	0.88–1.51	0.295
Day-care service	2.42	1.83–3.21	<0.001
Home helper	0.71	0.81–1.37	0.714
Charlson comorbidity index (continuous)	1.04	0.95–1.13	0.375
GDS-15 (continuous)[†]	1.01	0.96–1.05	0.762
Presence of chronic diseases (vs. absence)			
Ischemic heart disease	1.02	0.68–1.53	0.926
Congestive heart failure	1.16	0.73–1.84	0.523
Cerebrovascular disease	1.00	0.76–1.32	0.986
Diabetes mellitus	0.78	0.50–1.22	0.272
Dementia	3.00	2.29–3.92	<0.001
Cancer	0.84	0.49–1.44	0.520
Hospitalization during 36-month follow-up (vs. never admitted)	1.08	0.82–1.42	0.576
Caregiver variables (*n* = 1442)			
Men (vs. women)	0.95	0.67–1.33	0.752
Age (continuous)	1.01	1.00–1.02	0.059
Character of caregiver (vs. child)			
Spouse	0.90	0.64–1.28	0.555
Daughter-in-law	1.29	0.88–1.88	0.189
Others	1.21	0.60–2.43	0.596
ZBI score(continuous)[‡]	1.03	1.02–1.04	<0.001

[†]GDS-15, geriatric depression scale, *n* = 1327. [‡]ZBI, the Zarit Burden Interview. *n* = 1153. HR, hazard ratio.

demonstrated that common risk factors of LTC placement of community-dwelling elderly were older age, presence of dementia, and caregiver's burden.[16,18,19]

Although one of the aims of day-care service is to minimize or delay the possibility of institutionalization and maximize the potential for care recipients to maintain an independent life in the community, only a limited number of studies have examined the impact of day-care service on LTC placement among community-dwelling older adults – and most of these have targeted demented patients. Previous studies targeting dementia have demonstrated that day-care use is associated with nursing home placement in persons with Alzheimer's disease.[7,8] We expanded the target group and demonstrated a striking association between day-care service use and the risk of LTC placement for community-dwelling dependent elderly patients with various chronic diseases, even after adjusting for the presence of dementia and caregiver's burden. We clearly showed,

after adjusting for potential confounders, that the frequency of day-care service use had a negative impact on LTC admission with the 36-month follow-up period. The use of day-care service two or more times per week negatively affected LTC placement, but there was no significant association between institutionalization and the use of day-care service once a week. It is possible that participants with more comorbidities and a more depressive mood use day-care service more frequently; thus, participants using a day-care service two or more times per week were more likely to be placed in LTC facilities. However, even if comorbidity index score and GDS-15 score were included in the analysis, the association between LTC placement and the use of day-care service two or more times per week persisted (data not shown). This contrasts with our recent report that the risk of 21-month mortality among community-dwelling elderly was reduced significantly with frequent use of day-care service.[6] The complex decision to place older
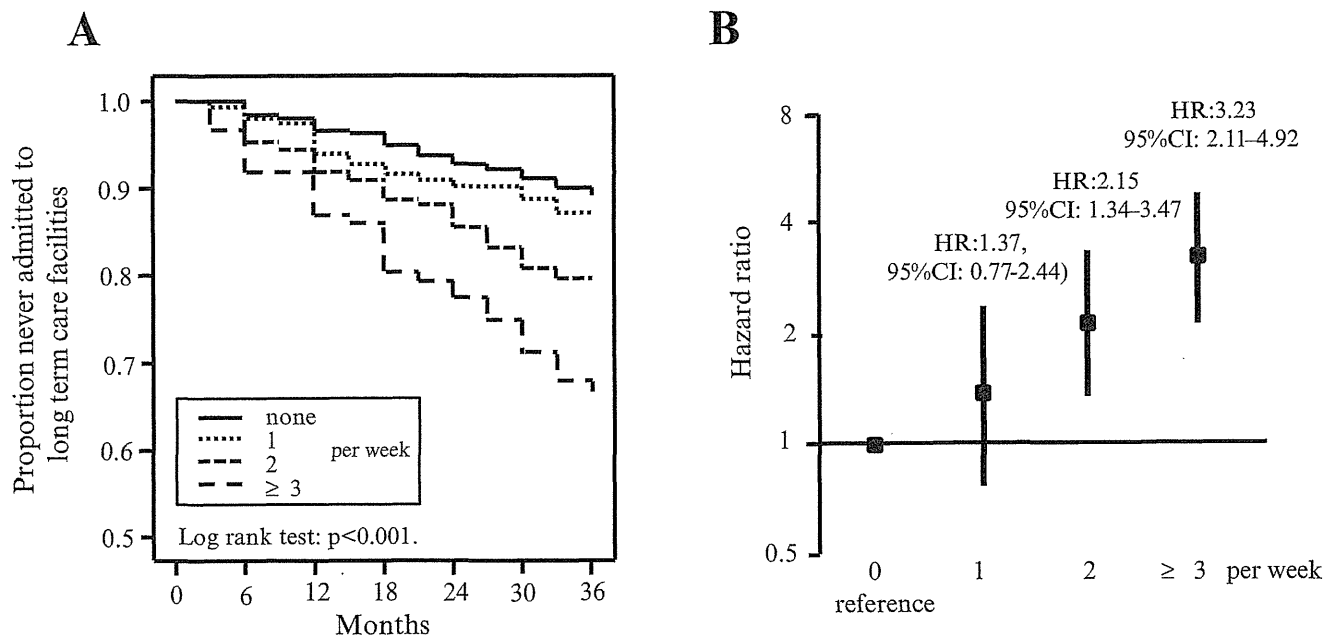
A

B

Figure 1 (A) Kaplan–Meier estimates of long-term care (LTC) placement over 36 months according to the frequency of day-care service use (times per week). The log-rank test: $P < 0.001$. (B) Risk of LTC placement based on the frequency of day-care service use (times per week), adjusting for potential confounders (recipient's gender, age, ADL status, presence or absence of dementia, caregiver's gender, age, and Zarit Burden Interview score). The y-axis is the adjusted hazard ratios (HR) on a log scale. Black squares are point estimates from a Cox proportional hazards model adjusting for potential confounders. The error bars represent 95%CI. A simple black square without confidence intervals represented the referent group, nonusers.

Table 3 Hazard ratios for long-term care placement associated with day-care service use (multivariate models)

Models	Hazard ratio	95% CI	P-value
Model 1 ($n = 1739$)	2.32	1.75–3.08	<0.001
Model 2 ($n = 1739$)	1.96	1.47–2.62	<0.001
Model 3 ($n = 1150$)	2.34	1.60–3.41	<0.001

Model 1 includes recipient gender and age. Model 2 includes recipient gender, age, ADL score, and presence or absence of dementia. Model 3 includes variables used in model 2 and caregiver's gender, age and Zarit Burden Interview score.

people in LTC is based on care recipient and caregiver characteristics and the sociocultural context of the recipient and caregiver. We do not know the exact reason for this negative effect of day-care service on LTC placement. There are conflicting findings in regard to the effect of day-care service on caregivers' stress, depression, subjective or objective burden, and physical and emotional well-being,[20] although a recent relatively large study demonstrated that day-care service had a beneficial effect on restricting caregiving time and providing respite to caregivers.[9,10] It is possible that day-care service alone cannot satisfy the complex needs of caregivers and care recipients sufficiently to enable continued home care, and it is unlikely to change the caregiver's preference for institutional placement.[21] Although we still do not know whether the character-

istics of caregivers and recipients, or day-care service use itself, increase the risk of LTC placement, the relief and improved mental and physical well-being of caregivers following day-care service use may enhance the willingness of caregivers to consider LTC placement. Caregivers who use day-care service or other respite services may become more aware of their level of stress and more willing to consider LTC placement as an acceptable option, especially if the service experience is positive or if the caregiver receives encouragement to institutionalize from professionals or other caregivers.[22]

This study has important limitations. First, the study was not a randomized intervention trial. Japan has introduced the LTCI program, which provides various services, including day-care services, according to clients' preferences. Therefore, we could not randomize the use

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of this service. Because of the observational design of the present study, differences in unmeasured factors including the severity of patients' chronic diseases, caregivers' health conditions, and quality of services may account in part for the findings. Those who use formal services may have greater need for caregiving than those who do not use formal services. The unmeasured needs that contribute to day-care service use may be stronger than the positive effects of service. Other aspects of the present study should also be considered. In the analysis, baseline data of service use was included, but changes in service use during the follow-up period were not considered. Our results may not be representative of the Japanese frail elderly in the community as a whole because the subjects in this study represented an urban population. In addition, these findings may not be generalizable to other populations given that local health practices, a variety of social and economic factors, ethnic attitudes about caring for very old people, and cost/access to day-care centers may have influenced these results.

In the present study, we showed that day-care service does not achieve the LTCI program aim of reducing the use of institutional care services of elderly people to enable them to maintain their lives at home. It may be possible that the respite for caregivers provided by day-care service is not enough to continue caregiving at home. As is true for any observational study, we cannot firmly establish a cause-and-effect relationship between day-care service use and LTC placement. In addition, the present study could not evaluate the exact reasons for the unfavorable effect of this service on LTC placement. Further studies are needed to determine why caregiving families decide to use day-care services, reasons for LTC placement, and whether day-care services meet the needs of families and care recipients throughout the caregiving career. In addition, future research should assess the quality of day-care programs and examine whether the quality of day-care services affects the LTC placement of clients. Health-care providers and care managers should recognize that day-care service use may augment LTC placement in dependent older people. Policy makers and practitioners should consider implementing a multidimensional support program to reduce caregivers' willingness to consider LTC placement.

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Disclosure statement

The authors have no conflicts of interest with any of the manufacturers of medications evaluated in this paper.

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ORIGINAL ARTICLE: EPIDEMIOLOGY,
CLINICAL PRACTICE AND HEALTH

Cognitive impairments and functional declines in older adults at high risk for care needs

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Aim: Functional status of those who have very mild cognitive impairment have not been sufficiently investigated. In the current study, we analyzed the characteristics of functional awareness in older adults who had cognitive impairment and were at high risk of requiring support/care (termed as specified elderly at high risk for care needs in the long-term care insurance scheme).

Methods: The answers of a health check, which is provided by the local municipal government for those aged 75 years or older who have not been certified as eligible for care services, were analyzed. The differences of the variables between the two groups regarding yes/no answers to each of three cognition-related questions were analyzed. Then, a multiple logistic analysis was carried out to investigate the association of yes/no answers of the three cognition-related questions and the awareness of functional decline.

Results: The participants who had cognitive impairment had greater awareness of functional declines. Multiple logistic regression analysis showed that subjective memory impairment and disorientation were significantly associated with a wider range of awareness of functional decline.

Conclusions: Subjective cognitive impairment was associated with a wide range of awareness of functional decline in older adults at high risk for care need. **Geriatr Gerontol Int 2013; 13: 77–82.**

Keywords: depressive mood, dysphagia, instrumental activities of daily life, memory impairment, physical activity, vitality.

Introduction

Screening for cognitive impairment is essential for better health outcomes. Early identification and intervention holds the promise of improving overall care for affected persons through the use of chronic disease management strategies. In general, the existing literature does not support screening of unselected older adults for cognitive impairment;[1] however, screening in a high-risk population might be valid.

Several factors are closely associated with mild cognitive impairment (MCI) and very early dementia. Depressive mood might be a risk factor or an early manifestation of dementia.[2–4] Subtle impairments of instrumental activities of daily living (IADL) might also be very early manifestations.[5,6]

In Japan, the public long-term care insurance system provides services to older adults who have been certified as requiring support (level 1 and 2) or care (levels ranging from 1 to 5 depending on their care needs). Uncertified, but not quite healthy, older adults who are considered at high risk of requiring support/care are categorized as specified elderly at high risk of care needs (specified elderly are provided with preventive care services by the municipalities in which they reside). The specified elderly are community-dwelling and have neither basic activities of daily living (B-ADL) impairments nor dementia. The specified elderly, however, is supposed to be the transitional stage to requiring care. Elucidating the characteristics of this group and developing some adequate intervention on this population to prevent the transition to requiring care are warranted. The local governments provide a health check of the uncertified elderly annually, in which all examined subjects complete a basic yes/no questionnaire that consists of simple assessments of their instrumental activities of daily living (7 items), memory problems (3 items), walking status (5 items), dysphagia (3 items), nutritional

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status (2 items) and depressive mood (5 items).[7] Subjective memory complaint might be an easy method to screen cognitive impairment, and a report showed that subjective memory complaint was associated with depressive mood and difficulties of activities of daily living (ADL).[8] In this assessment, subjective cognitive dysfunction was evaluated by three questions, and in the same assessment awareness of functional declines were also evaluated.

However, the functional characteristics of those who have subjective cognitive impairment by this assessment in the specified elderly at high need for requiring care have been unclear. Elucidating the characteristics of this population might lead to the development of intervention for the prevention of the transition to dementia and/or the status of requiring care.

In order to portray the characteristics of awareness of functional decline in those who are considered to have subjective cognitive impairment by this assessment, we examined the associations between non-cognitive items and cognitive items of the questionnaire in older adults at high risk of requiring support/care.

Methods

Measurements

To screen the elderly at high risk for care, a health check is provided by the local municipal government for those elderly aged 75 years or older who have not been certified as eligible for care services.

The health check includes a yes/no questionnaire that consists of simple assessments of their IADL (7 items), subjective cognitive problems (3 items), walking status (5 items), dysphagia (3 items), nutritional status (2 items) and depressive mood (5 items). In the current study, we calculated the scores for each of these six domains, with higher scores indicating worse functioning. The data for 1163 men and 2651 women who were determined to be specified elderly were obtained from annual health checks implemented in one of the urban municipalities in central Japan during October and November in 2009.

Continuous variables (age, blood pressure, hemoglobin, serum albumin and body mass index) were compared by Student's *t*-test, and others were compared by χ^2 analysis.

The questionnaire was as follows;
1) IADL
1. Do you go out alone using transportation? 2. Do you shop for daily necessaries by yourself? 3. Do you manage your bank account on your own? 4. Do you visit your friends alone? 5. Are you consulted by your family or friends?

2) Waking status
6. Do you climb up the stairs without holding onto handrails or walls? 7. Do you stand up without assistance? 8. Can you walk for more than 15 min without rest? 9. Have you fallen within a year? 10. Are you anxious about falls?
3) Nutrition
11. Have you lost more than 2–3 kg in weight in the recent 6 months? 12. BMI < 18.5 kg/m^2
4) Dysphagia
13. Do you have difficulty in eating hard food? 14. Do you choke with liquid? 15. Do you care about dry mouth?
5) Vitality
16. Do you go out more than once a week? 17. Do you go out less frequently than last year?
6) Cognition
18. Are you told that you repeatedly ask the same things? 19. Do you look up the numbers, dial and make phone calls without help? 20. Do you sometimes forget the date?
7) Depressive mood
21. Do you feel unfulfilled with daily life? 22. I do not enjoy my life as I used to (recent 2 weeks). 23. I feel more bothered to do everyday things than before (recent 2 weeks). 24. I do not feel that I am useful (recent 2 weeks). 25. I feel tired for no reason (recent 2 weeks).

The differences of the variables between the two groups regarding yes/no answers to each of the three cognition-related questions (Are you told that you always ask the same things? [memory]; Do you look up numbers, dial and make calls without help? [telephone]; Do you sometime forget what day it is? [orientation]) were analyzed. In the analysis, answers for related questions were scored as follows: IADL, 0–5; walking status, 0–5; depressive mood, 0–5; dysphagia, 0–3; vitality, 0–2; and nutritional status, 0–2. The difference of the distribution was analyzed by Student's *t*-test, Mann–Whitney *U*-test, or χ^2 analysis. Then, a multiple logistic analysis was carried out to investigate the association of yes/no answers of these three cognition-related questions and the awareness of functional decline.

Results

The characteristics of the participants are shown in Table 1.

IADL, walking status, depressive mood, vitality, and nutrition were all associated with subjective memory impairment and disorientation in univariate analysis (Tables 2 and 4). IADL, walking status, depressive mood and vitality were associated with an inability to call by themselves, but dysphagia and nutritional status were not significantly associated (Table 3).

Multiple logistic regression analysis showed that vitality was not associated with each of the three

cognition-related items (Table 5), although it was associated in univariate analysis (Tables 2–4). Nutritional status was not associated with subjective memory impairment and disorientation by multiple logistic regression analysis either (Table 5).

Discussion

The present study showed that self-claiming memory impairment was associated with a wide range of awareness of functional decline. The results also showed that depressive mood was significantly associated with subjective cognitive impairment. Community studies in normally-aging populations suggest that depression is associated with cognitive decline.[9–18] Older adults with depression often present with signs and symptoms indicative of functional or cognitive impairment. These somatic symptoms make evaluating and treating depression in older adults more complex. Depression in late life is more frequently associated with cognitive changes. Cognitive impairment in late-life depression might be a result of a depressive disorder or an underlying dementing condition. Memory complaints are also common in older adults with depression. There is a wide range of cognitive impairment in late-life depression, including decreased central processing speed, executive dysfunction and impaired short-term memory. The etiology of cognitive impairment might include cerebrovascular disease, which likely interrupts key pathways between frontal white matter and subcortical structures important in mood regulation and structural changes, such as hippocampal atrophy.[19] Depressive symptoms often coexist with dementia or MCI.[4] In the current survey, the questionnaire asked for subjective answers regarding cognitive function. Hence, one cannot deny the possibility that depressive mood might have interfered with the self-assessment of one's own cognition.

Memory impairment and disorientation was associated with lower walking status. The association of physical activity and memory is well recognized.[20,21] Also, an association between physical frailty and cognitive dysfunction has been reported.[22,23] Physical frailty is associated with the risk of MCI and a rapid rate of cognitive decline in aging.[24] A lower level of fitness was associated with hippocampal atrophy,[25] and exercise training increased the hippocampal volume.[26] The current results were in agreement with these previous findings.

Table 1 Participants' backgrounds

n	3814
Age (years)	75.1 (6.2)
Sex (male/female)	1163/2651
Body mass index	22.5 (4.5)
Systolic BP (mmHg)	134.0 (17.8)
Diastolic BP (mmHg)	74.4 (11.0)
Hemoglobin (g/dL)	12.8 (1.4)
Albumin (g/dL)	4.2 (0.3)

Mean (SD). BP, blood pressure.

Table 2 Differences between participants with or without memory impairment

	No memory impairment	Memory impairment	P-value
n	2654	1160	
Age (years)	74.6 ± 6.0	76.2 ± 6.4	<0.01
Male (% of male)	799 (30.1)	364 (31.4)	0.45
Body mass index(kg/m²)	22.6 ± 4.7	22.4 ± 4.1	0.10
Systolic BP (mmHg)	134.2 ± 18.0	133.6 ± 17.4	0.33
Diastolic BP (mmHg)	74.5 ± 11.0	73.9 ± 10.9	0.12
Hemoglobin (g/dl)	12.8 ± 1.4	12.7 ± 1.4	<0.01
Albumin (g/dl)	4.3 ± 0.3	4.2 ± 0.3	0.02
IADL (0–7)	5.8 ± 1.5	5.1 ± 1.8	<0.01
Walking status (0–5)	2.8 ± 1.4	2.5 ± 1.3	<0.01
Depressive mood (0–5)	1.3 ± 1.5	2.3 ± 1.7	<0.01
Dysphagia (0–3)	1.5 ± 1.0	1.8 ± 1.0	<0.01
Vitality (0–2)	1.6 ± 0.6	1.3 ± 0.7	<0.01
Nutrition (0–2)	16 ± 0.6	1.5 ± 0.6	0.01

Mean ± SD. Age, body mass index, systolic and diastolic blood pressure (BP), hemoglobin and albumin were analyzed by Student's t-test. Sex was analyzed by χ^2-test. Instrumental activities of daily living (IADL), walking status, depressive mood, dysphagia, vitality and nutrition were analyzed by Mann–Whitney U-test.

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Table 3 Differences between participants with or without impairment in telephone function

	No impairment	Impairment	P-value
n	3350	464	
Age (years)	74.9 ± 6.0	76.5 ± 7.2	<0.01
Male (% of male)	981 (29.3)	182 (39.2)	<0.01
Body mass index (kg/m²)	22.5 ± 4.5	22.6 ± 4.8	0.88
Systolic BP (mmHg)	133.8 ± 17.8	135.7 ± 17.9	0.03
Diastolic BP (mmHg)	74.2 ± 10.9	75.21 ± 1.0	0.07
Hemoglobin (g/dL)	12.8 ± 1.4	12.9 ± 1.5	0.23
Albumin (g/dL)	4.2 ± 0.3	4.3 ± 0.4	0.85
IADL (0–7)	5.8 ± 1.4	4.1 ± 2.0	<0.01
Walking status (0–5)	2.8 ± 1.4	2.4 ± 1.4	<0.01
Depressive mood (0–5)	1.6 ± 1.6	2.2 ± 1.8	<0.01
Dysphagia (0–3)	1.6 ± 1.0	16 ± 1.0	0.73
Vitality (0–2)	1.5 ± 0.6	13 ± 0.7	<0.01
Nutrition (0–2)	1.6 ± 0.6	1.6 ± 0.6	0.72

Mean ± SD. Age, body mass index, systolic and diastolic blood pressure (BP), hemoglobin and albumin were analyzed by Student's t-test. Sex was analyzed by χ^2-test. Instrumental activities of daily living (IADL), walking status, depressive mood, dysphagia, vitality and nutrition were analyzed by Mann–Whitney U-test.

Table 4 Differences between participants with or without disorientation

	No impairment	Impairment	P-value
n	2550	1264	
Age (years)	74.7 ± 5.9	76.0 ± 6.7	<0.01
Male (% of male)	743 (29.1)	420 (33.2)	0.01
Body mass index (kg/m²)	22.7 ± 4.7	22.3 ± 4.1	0.01
Systolic BP (mmHg)	134.2 ± 17.7	133.7 ± 18.0	0.49
Diastolic BP (mmHg)	74.6 ± 10.7	73.9 ± 11.4	0.09
Hemoglobin (g/dL)	12.8 ± 1.4	12.8 ± 1.4	0.84
Albumin (g/dL)	4.3 ± 0.3	4.2 ± 0.3	0.02
IADL (0–7)	5.8 ± 1.5	5.1 ± 18	<0.01
Walking status (0–5)	2.8 ± 1.4	2.6 ± 1.4	<0.01
Depressive mood (0–5)	1.3 ± 1.5	2.3 ± 1.7	<0.01
Dysphagia (0–3)	1.5 ± 1.0	1.8 ± 1.0	<0.01
Vitality (0–2)	1.5 ± 0.6	1.3 ± 0.7	<0.01
Nutrition (0–2)	1.6 ± 0.6	1.5 ± 0.6	0.02

Mean ± SD. Age, body mass index, systolic and diastolic blood pressure (BP), hemoglobin and albumin were analyzed by Student's t-test. Sex was analyzed by χ^2-test. Instrumental activities of daily living (IADL), walking status, depressive mood, dysphagia, vitality and nutrition were analyzed by Mann–Whitney U-test.

Awareness of lower IADL was significantly associated with subjective cognitive impairment. This finding is conceivable, given that IADL requires complex cognitive function, and becomes vulnerable in early stages of cognitive decline.[27–29]

Univariate analysis showed that vitality was associated with awareness of subjective cognitive declines; however, multiple logistic analysis did not show a significant association with subjective cognitive dys-function in the current study. The exclusion of depressive mood from the multiple regression analysis models made both vitality and nutrition significantly associated with cognition-related items (data not shown). The association of vitality with subjective cognitive declines might be at least partly through depressive mood. Toba *et al.* reported that vitality was impaired in the elderly with cognitive impairment.[30] That study involved more severely

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Table 5 Results of multiple logistic regression analysis

	Memory			Telephone			Orientation		
	Odds ratio	95% CI	P-value	Odds ratio	95% CI	P-value	Odds ratio	95% CI	P-value
Age	1.021**	1.009–1.034	<0.01	0.994	0.997–1.011	0.48	1.011	0.999–1.023	0.08
Sex	1.013	0.860–1.193	0.88	0.769*	0.612–0.965	0.02	0.888	0.758–1.042	0.15
IADL	1.125***	1.060–1.194	<0.01	1.824**	1.693–1.966	<0.01	1.154***	1.088–1.224	<0.01
Walking status	1.072*	1.008–1.140	0.03	1.043	0.954–1.140	0.36	1.065*	1.003–1.131	0.04
Depressive mood	1.283***	1.222–1.347	<0.01	1.075*	1.005–1.151	0.04	1.298***	1.237–1.361	<0.01
Dysphagia	1.342***	1.284–1.458	<0.01	1.027	0.914–1.153	0.66	1.300***	1.199–1.410	<0.01
Vitality	1.061	0.913–1.235	0.44	1.048	0.880–1.248	0.60	1.005	0.866–1.166	0.95
Nutrition	1.050	0.932–1.182	0.43	0.929	0.782–1.104	0.41	1.095	0.975–1.229	0.13

**$P < 0.01$; *$P < 0.05$. IADL, Instrumental activities of daily living.

cognitively impaired participants than the current study, which might be a reason of the discrepancy with the current study.

Univariate analysis showed an association between nutritional status and awareness of cognitive declines (memory and orientation); however, multiple regression analysis did not. This might also be a result of adjustment for depressive mood.

The present finding that dysphagia was associated with memory impairment and disorientation is not in agreement with a recent study showing that memory was not associated with dysphagia.[31] In the current study, we could not obtain information about the comorbidity of the interviewees. Therefore, one can speculate that the difference in the rate of stroke prevalence might explain the discrepancy. The observed discrepancy requires further substantiation.

The association of subjective cognitive impairment and a wide range of awareness of functional declines might suggest that these functional impairments may share a common pathology, which leads to a construction of complex interactions among symptoms of geriatric syndrome or frailty syndrome.

The current study suggested that subjective cognitive impairment assessed by a relatively simple questionnaire was associated with a wide range of functional decline in older adults at high risk for care need. Therefore, screening for subjective cognitive impairment in this population might be valid for the early detection of dementia and other functional declines.

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Disclosure statement

None of the authors have personal or financial conflicts of interest with regard to this manuscript.

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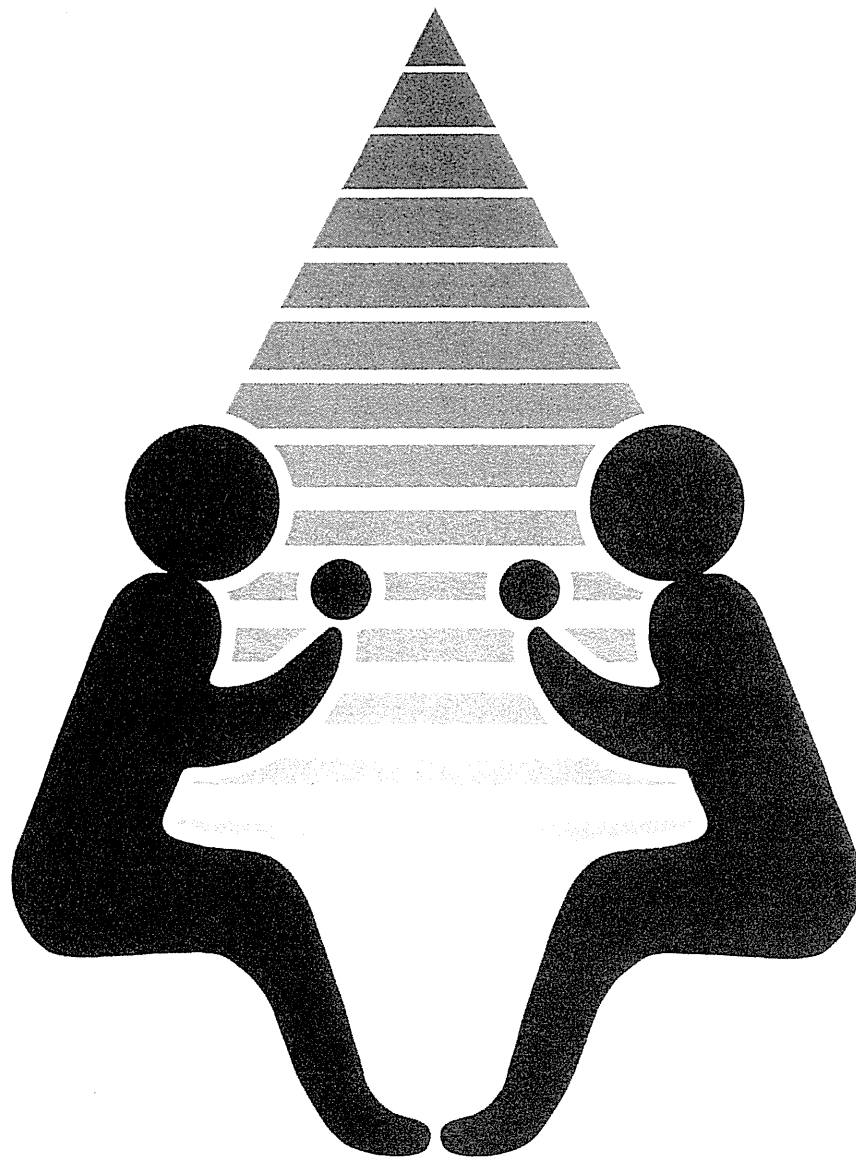
《原　著》

介護保険施設，病院(療養病床ならびに回復期リハビリテーション病棟)における摂食・嚥下障害を有する高齢者に関する入・退所(院)時の情報連携の実態に関する研究

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要旨　摂食嚥下困難を有する高齢者に対する栄養ケアが，医療機関，介護保険施設ならびに在宅において継続的になされることは，高齢者のQOLの維持向上において極めて重要である．本研究では，全国における総数4,334の介護老人福祉施設，介護老人保健施設，医療療養病床，回復期リハビリテーション病棟における，摂食・嚥下障害を有する高齢者に関する入・退所(院)時の書面による他施設，他医療機関との情報連携に関する実態を調査した(回収率26.2％)．入・退所(院)時に，摂食・嚥下障害を有する高齢者に関する文書による連携がある施設は，特養，老健，療養病床の5〜6割に過ぎず，回復期リハにおいては8割程度であり，この文書による連携に管理栄養士が関わっているのはその3〜5割程度に過ぎなかった．また，情報連携のある状況でも，食事形態や食事内容，摂食・嚥下機能の状態は伝達されているものの，栄養アセスメント，モニタリング，栄養ケア計画の内容について情報提供を行っている施設は少なかったことから，管理栄養士による栄養ケア・マネジメント関連帳票を用いた情報提供が本人，家族の同意のもとに行われることが求められる．

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I. 緒　言

摂食嚥下困難を有する高齢者の栄養ケアは，その身体・生活機能により個人への対応が異なるため，高齢者の個々人に適した栄養ケアが継続的になされる必要がある．そのためには，摂食嚥下困難を有する高齢者に対して，医療機関，介護保険施設ならびに在宅を通してシームレスな栄養ケア・食事支援が可能でなければならない[1]．

2006年の診療報酬改定に伴い新設された栄養管理実施加算により，病院における栄養管理体制が構築されたことにより，栄養サポートチーム(Nutrition Support Team: NST)が多くの病院で稼働するようになった．さらに，2010年の診療報酬改定では，栄養サポートチーム加算(NST加算)が新設されたことにより，病院内におけるチームによる包括的な栄養ケアが推進されるようになった．しかし，2009年に実施された榎ら[2]の，NST稼働施

表1 摂食・嚥下障害を疑う高齢者がいる施設と人数

	特養 n=419			老健 n=264			療養病床 n=185			回復期リハ n=204		
	n	(%)	mean (SD)	n	(%)	mean (SD)	n	(%)	mean (SD)	n	(%)	mean (SD)
いる	399	(95.2)	23.7 (17.0)	252	(95.5)	15.6 (13.9)	166	(89.7)	19.2 (24.7)	186	(91.2)	15.4 (15.9)
いない	4	(1.0)	- -	6	(2.3)	- -	6	(3.2)	- -	9	(4.4)	- -
不明	16	(3.8)	- -	6	(2.3)	- -	13	(7.0)	- -	9	(4.4)	- -

※mean(SD)は100床当りの摂食・嚥下障害を疑う者の人数. n=有効回答施設

設における病院退院時の在宅への栄養ケアの継続性を調査した報告によると, 地域一体型NSTを構築していた病院は, 392病院のうち35病院と, わずか8.9%であった. 葛谷ら[3]は, 病院において取り組まれた高齢者の摂食・嚥下障害に対する対応や栄養ケアは在宅に移行すると中断されてしまうと指摘しており, これは高齢者のQOLの維持, 向上という観点からも極めて大きな課題と言える. しかしながら, 現在, わが国の施設および病院における摂食・嚥下障害を有する高齢者に関する情報連携の実態状況を調査した報告は少ない.

そこで, 本研究では, 介護老人福祉施設(以下, 特養), 介護老人保健施設(以下, 老健), 医療療養病床(以下, 療養病床), 回復期リハビリテーション病棟(以下, 回復期リハ)における, 摂食・嚥下障害を有する高齢者に関する入・退所ならびに入・退院時の書面による他施設, 他医療機関との情報連携に関する実態を調査し, その課題を検討することとした.

II. 対象および方法

対象施設は全国の登録名簿から地域別床数別に3割を無作為抽出した特養1,517施設, 老健941施設, 療養病床1,134病院, 全国回復期リハビリテーション協議会の登録名簿に登録された全回復期リハ742病院の合計4,334箇所であった. 回答者は, 介護保険施設では常勤管理栄養士, 管理栄養士不在の場合は常勤看護師, 回復期リハおよび療養病床では担当の常勤管理栄養士, 管理栄養士が不在の場合は看護師長とした.

調査方法は, 対象施設の施設(院)長, 責任者宛てならびに回答者への調査協力依頼文書は, 依頼状とIDを付し連結可能匿名化した調査票とともに郵送し, 回答者の自由意思に基づいた調査票の返信をもって協力の承諾を得たとみなした.

主な調査内容は, ①施設概要, ②摂食・嚥下障害を疑う者(本調査では, 経管栄養を一部併用の者も含む経口摂取者のうち, 以下1〜4のいずれかに該当する者と定義した. 1)キザミ食およびミキサー食を摂取している者や, 水分摂取の際にとろみ調整食品を使用している者, 2)食

事摂取時に「むせ」などの兆候がみられる者, 3)既往歴や現病歴に誤嚥性肺炎を有する者, 4)摂食・嚥下障害の診断を有する者)の人数, ③摂食・嚥下障害を有する高齢者に関する入・退所(院)時の文書による他施設との情報連携の有無, ④情報提供先および情報提供元となる施設, ⑤情報提供に関わる職種, ⑥情報提供の内容, ⑦前施設の管理栄養士から情報提供が必要と思われる内容, ⑧管理栄養士から情報提供を行っている内容であった. 調査票は, 神奈川県立保健福祉大学内事務局において収集後, 電子媒体にデータ入力し, SPSS 17.0を用いて基本集計を行った. なお, 本調査は連結可能匿名化による自由意思に基づいた調査であり, 神奈川県立保健福祉大学倫理審査委員会の承認を得て実施した.

III. 結　果

1. 回収状況

施設別のアンケート回収数は, 特養440(29.0%), 老健275(29.2%), 療養病床205(18.1%), 回復期リハ217(29.2%), 総回収数1,137(26.2%)であり, 特養, 老健, 療養病床ともに, 地域病床別に20〜30%程度の回収率であり, 地域病床別における大きな偏りはみられなかった. また, 回答者は, 全施設種において6割以上が「管理栄養士」であり, 次いで「看護師」, 「その他」であった.

2. 施設特性

対象施設における平均床数は, 特養70.9(標準偏差[以下, SD]26.7)床, 老健91.6(SD 25.4)床, 療養病床81.6(SD 78.7)床, 回復期リハ63.8(SD 37.0)床であった. また, 100床当りの常勤管理栄養士数は, 特養1.5(SD 0.9)名, 老健1.2(SD 0.5)名, 療養病床1.4(SD 2.9)名, 回復期リハ1.2(SD 1.7)名であった.

3. 摂食・嚥下障害を疑う者がいる施設と人数

摂食・嚥下障害を疑う者が「いる」施設は特養95.2%, 100床当り平均23.7(SD 17.0)名, 老健95.5%, 100床当り平均15.6(SD 13.7)名, 療養病床89.7%, 100床当り平均19.2(SD 24.7)名, 回復期リハ91.2%, 100床当り15.4(SD 15.9)名に及んでいた(表1).

4. 摂食・嚥下障害を有する高齢者に関する入・退所(院)時の文書による情報連携の現状

1)連携状況

摂食・嚥下障害を有する高齢者について他施設と文書による情報連携を行っていた施設は，特養54.8％，老健65.6％，療養病床60.9％，回復期リハ79.9％と，回復期リハでは約8割が文書による情報提供を行っていたが，特養，老健，ならびに療養病床では5〜6割にすぎなかった(表2).

2)主な情報提供先および情報提供元

特養(n=234)および老健(n=177)からの情報提供先は，「一般病院」がそれぞれ73.1％と72.3％，「居宅介護支援事業所」がそれぞれ27.4％と49.2％，「特養」がそれぞれ22.6％と62.1％であった. 一方，特養および老健への情報提供元は「一般病院」がそれぞれ82.1％と84.7％，「老健」がそれぞれ58.5％と61.6％，「居宅介護支援事業所」がそれぞれ47.4％と52.5％であった(表2).

療養病床(n=120)および回復期リハ(n=167)からの情報提供先は，「老健」がそれぞれ84.2％と90.4％，「一般病院」がそれぞれ77.5％と71.9％，「特養」がそれぞれ72.5％と73.7％であった. 一方，療養病床および回復期リハへの情報提供元は，「一般病院」がそれぞれ87.5％と89.8％，「老健」がそれぞれ67.5％と35.3％，「療養病床」がそれぞれ56.7％と29.9％であった(表2).

3)情報提供に関る職種

特養(n=234)および老健(n=177)からの情報提供に関っている職種は，「看護師」がそれぞれ78.2％と78.5％，「介護支援専門員」がそれぞれ53.0％と63.3％，「管理栄養士」がそれぞれ51.3％と65.0％であった. 一方，特養および老健への情報提供に関っている職種は，「看護師」がそれぞれ77.8％と76.3％，「介護支援専門員」がそれぞれ59.0％と55.4％，「管理栄養士」がそれぞれ45.7％と37.3％であった(表2).

療養病床(n=120)および回復期リハ(n=167)からの情報提供に関わっている職種は，「看護師」がそれぞれ93.3％と96.4％，「医師」がそれぞれ68.3％と71.3％，「言語聴覚士」がそれぞれ50.0％と94.6％であった. 一方，療養病床および回復期リハへの情報提供に関わっている職種は，「看護師」がそれぞれ87.5％と85.6％，「医師」がそれぞれ68.3％と62.3％，「言語聴覚士」がそれぞれ43.3％と73.7％であった(表2).

4)情報提供内容

特養(n=234)および老健(n=177)からの情報提供内容は，「食事形態や食事内容」がそれぞれ89.7％と98.9％，「摂食・嚥下機能の状態」がそれぞれ75.2％と28.2％，「栄養アセスメントの内容」がそれぞれ16.2％と30.5％であった. 一方，特養および老健への情報提供内容は，「食事形態や食事内容」がそれぞれ97.4％と96.0％，「摂食・嚥下機能の状態」がそれぞれ86.8％と81.9％，「嚥下機能評価の結果」がそれぞれ19.2％と25.4％であった(表2).

療養病床(n=120)および回復期リハ(n=167)からの情報提供内容は，「食事形態や食事内容」がそれぞれ99.2％と100.0％，「摂食・嚥下機能の状態」がそれぞれ91.7％と94.6％，「嚥下機能評価の結果」がそれぞれ47.5％と71.3％であった. 一方，療養病床および回復期リハへの情報提供内容は，「食事形態や食事内容」がそれぞれ96.7％と92.8％，「摂食・嚥下機能の状態」がそれぞれ81.7％と80.2％，「嚥下機能評価の結果」がそれぞれ42.5％と54.5％であった(表2).

5. 管理栄養士による摂食嚥下障害を有する高齢者に関する情報提供の現状

1)管理栄養士による入・転所(院)時の情報提供の必要性

施設に入(転)院した嚥下障害のある高齢者について，前施設の管理栄養士からの情報提供を必要と「する」施設は特養92.4％，老健97.7％，療養病床97.9％，回復期リハ91.1％であり，すべての施設種において9割以上が管理栄養士からの情報提供を必要としていた(表3).

2)管理栄養士による入・転所(院)時の情報提供を必要とする内容

管理栄養士による情報提供を必要とする内容は，特養(n=232)および老健(n=250)では「食事形態」がそれぞれ97.8％と96.4％，「食事時の注意事項」がそれぞれ89.7％(n=208)と86.0％，「嗜好や禁忌」がそれぞれ88.8％(n=206)と85.6％(n=214)，「栄養状態」がそれぞれ85.8％(n=199)と80.0％(n=200)，「治療食の内容」がそれぞれ85.3％(n=198)と91.6％(n=229)，「栄養補給量」がそれぞれ78.4％(n=182)と81.6％(n=204)，「食事時の姿勢や体位」がそれぞれ74.6％(n=173)と65.2％(n=163)，「水分補給量」がそれぞれ70.7％(n=164)と60.0％(n=150)であった(表3).

一方，療養病床(n=190)および回復期リハ(n=174)では，「食事形態」がそれぞれ95.3％と97.1％，「治療食の内容」がそれぞれ88.9％と88.5％，「栄養補給量」がそれぞれ79.5％と79.9％，「嗜好や禁忌」がそれぞれ79.5％と77.0％，「栄養状態」がそれぞれ74.2％と73.6％，「食事時の注意事項」がそれぞれ72.3％と64.9％，「食事や栄養に関する経過」がそれぞれ64.2％と64.4％，「水分補給量」がそれぞれ62.6％と60.3％であった(表3).

3)管理栄養士による退所(院)先への栄養・食事に関する情報提供の有無

特養(n=440)および老健(n=275)から管理栄養士による退所先への情報提供については，「施設の体制として通常している」がそれぞれ34.5％と53.1％，「退所(院)先から要望がある際にしている」がそれぞれ16.8％と23.6％，

表2 介護保険施設・病院における摂食・嚥下障害を有する高齢者に関する入・退所(院)時の情報連携の実態(複数回答可).
n= 有効回答施設

	特養		老健		療養病床		回復期リハ	
	n	(%)	n	(%)	n	(%)	n	(%)
	n=427		n=270		n=197		n=209	
他施設との情報連携を行っている	234	(54.8)	177	(65.6)	120	(60.9)	167	(79.9)
施設(病院)からの情報提供先								
一般病院	171	(73.1)	128	(72.3)	93	(77.5)	120	(71.9)
医療療養型病床	44	(18.8)	72	(40.7)	73	(60.8)	128	(76.6)
診療所	19	(8.1)	29	(16.4)	32	(26.7)	56	(33.5)
歯科診療所	32	(13.7)	22	(12.4)	12	(10.0)	15	(9.0)
介護老人福祉施設	53	(22.6)	110	(62.1)	87	(72.5)	123	(73.7)
介護老人保健施設	52	(22.2)	117	(66.1)	101	(84.2)	151	(90.4)
居宅介護支援事業所	64	(27.4)	87	(49.2)	63	(52.5)	112	(67.1)
地域包括支援センター	28	(12.0)	40	(22.6)	42	(35.0)	79	(47.3)
訪問介護事業所	12	(5.1)	28	(15.8)	38	(31.7)	5	(3.0)
訪問看護ステーション	13	(5.6)	37	(20.9)	55	(45.8)	104	(62.3)
その他	2	(0.9)	6	(3.4)	2	(1.7)	5	(3.0)
施設(病院)への情報提供元								
一般病院	192	(82.1)	150	(84.7)	105	(87.5)	150	(89.8)
医療療養型病床	76	(32.5)	80	(45.2)	68	(56.7)	50	(29.9)
診療所	23	(9.8)	41	(23.2)	41	(34.2)	30	(18.0)
歯科診療所	27	(11.5)	16	(9.0)	9	(7.5)	5	(3.0)
介護老人福祉施設	62	(26.5)	68	(38.4)	63	(52.5)	45	(26.9)
介護老人保健施設	137	(58.5)	109	(61.6)	81	(67.5)	59	(35.3)
居宅介護支援事業所	111	(47.4)	93	(52.5)	39	(32.5)	29	(17.4)
地域包括支援センター	47	(20.1)	49	(27.7)	29	(24.2)	17	(10.2)
訪問介護事業所	21	(9.0)	28	(15.8)	28	(23.3)	20	(12.0)
訪問看護ステーション	19	(8.1)	36	(20.3)	44	(36.7)	28	(16.8)
その他	3	(1.3)	2	(1.1)	1	(0.8)	0	(0.0)
施設(病院)からの情報提供に関わる職種								
管理栄養士	120	(51.3)	115	(65.0)	49	(40.8)	56	(33.5)
看護師	183	(78.2)	139	(78.5)	112	(93.3)	161	(96.4)
介護支援専門員	124	(53.0)	112	(63.3)	42	(35.0)	37	(22.2)
医師	61	(26.1)	112	(63.3)	82	(68.3)	119	(71.3)
歯科医師	14	(6.0)	6	(3.4)	6	(5.0)	3	(1.8)
言語聴覚士	6	(2.6)	42	(23.7)	60	(50.0)	158	(94.6)
介護職種	108	(46.2)	87	(49.2)	22	(18.3)	29	(17.4)
家族	41	(17.5)	22	(12.4)	17	(14.2)	20	(12.0)
その他	20	(8.5)	15	(8.5)	10	(8.3)	14	(8.4)
施設(病院)への情報提供に関わる職種								
管理栄養士	107	(45.7)	66	(37.3)	32	(26.7)	36	(21.6)
看護師	182	(77.8)	135	(76.3)	105	(87.5)	143	(85.6)
介護支援専門員	138	(59.0)	98	(55.4)	40	(33.3)	31	(18.6)
医師	87	(37.2)	108	(61.0)	82	(68.3)	104	(62.3)
歯科医師	18	(7.7)	9	(5.1)	5	(4.2)	4	(2.4)
言語聴覚士	19	(8.1)	46	(26.0)	52	(43.3)	123	(73.7)
介護職種	76	(32.5)	53	(29.9)	17	(14.2)	14	(8.4)
家族	78	(33.3)	41	(23.2)	18	(15.0)	15	(9.0)
その他	14	(6.0)	12	(6.8)	8	(6.7)	14	(8.4)
情報提供先施設(病院)からの情報提供内容								
食事形態や食事内容	210	(89.7)	175	(98.9)	119	(99.2)	167	(100.0)
摂食・嚥下機能の状態	176	(75.2)	50	(28.2)	110	(91.7)	158	(94.6)
嚥下機能評価の結果	21	(9.0)	42	(23.7)	57	(47.5)	119	(71.3)
栄養アセスメントの内容	38	(16.2)	54	(30.5)	34	(28.3)	43	(25.7)
栄養ケア計画書の内容	35	(15.0)	46	(26.0)	22	(18.3)	24	(14.4)
モニタリングの内容	24	(10.3)	34	(19.2)	19	(15.8)	23	(13.8)
本人, 家族への栄養指導内容	24	(10.3)	40	(22.6)	39	(32.5)	77	(46.1)
利用者が実施していた経口訓練法	18	(7.7)	39	(22.0)	46	(38.3)	97	(58.1)
その他	4	(1.7)	5	(2.8)	4	(3.3)	3	(1.8)
情報提供元施設(病院)への情報提供内容								
食事形態や食事内容	228	(97.4)	170	(96.0)	116	(96.7)	155	(92.8)
摂食・嚥下機能の状態	203	(86.8)	145	(81.9)	98	(81.7)	134	(80.2)
嚥下機能評価の結果	45	(19.2)	45	(25.4)	51	(42.5)	91	(54.5)
栄養アセスメントの内容	42	(17.9)	27	(15.3)	19	(15.8)	20	(12.0)
栄養ケア計画書の内容	42	(17.9)	17	(9.6)	18	(15.0)	12	(7.2)
モニタリングの内容	23	(9.8)	20	(11.3)	11	(9.2)	9	(5.4)
本人, 家族への栄養指導内容	42	(17.9)	25	(14.1)	23	(19.2)	24	(14.4)
利用者が実施していた経口訓練法	27	(11.5)	40	(22.6)	38	(31.7)	68	(40.7)
その他	7	(3.0)	1	(0.6)	3	(2.5)	1	(0.6)

表3　管理栄養士による介護保険施設・病院における摂食・嚥下障害を有する高齢者に関する情報提供. n= 有効回答施設

	特養 n （%）	老健 n （%）	療養病床 n （%）	回復期リハ n （%）
	n=251	n=256	n=194	n=191
入・転所(院)時の情報提供を必要とする	232 （92.4）	250 （97.7）	190 （97.9）	174 （91.1）
必要とする情報提供内容（複数回答可）	n=232	n=250	n=190	n=174
治療食の内容	198 （85.3）	229 （91.6）	169 （88.9）	154 （88.5）
栄養補給量	182 （78.4）	204 （81.6）	151 （79.5）	139 （79.9）
栄養状態	199 （85.8）	200 （80.0）	141 （74.2）	128 （73.6）
水分補給量	164 （70.7）	150 （60.0）	119 （62.6）	105 （60.3）
食事形態	227 （97.8）	241 （96.4）	181 （95.3）	169 （97.1）
嗜好や禁忌	206 （88.8）	214 （85.6）	151 （79.5）	134 （77.0）
食事時の姿勢や体位	173 （74.6）	163 （65.2）	102 （53.7）	80 （46.0）
食事時の注意事項	208 （89.7）	215 （86.0）	138 （72.6）	113 （64.9）
本人・家族への栄養指導内容	97 （41.8）	102 （40.8）	85 （44.7）	88 （50.6）
食事や栄養に関する経過	157 （67.7）	186 （74.4）	122 （64.2）	112 （64.4）
嚥下機能評価の結果	137 （59.1）	159 （63.6）	108 （56.8）	93 （53.4）
その他	8 （3.4）	7 （2.8）	6 （3.2）	2 （1.1）
退所(院)先への情報提供の有無	n=440	n=275	n=204	n=217
施設の体制として通常行っている	152 （34.5）	146 （53.1）	64 （31.4）	76 （35.0）
退所(院)先から要望がある際に行っている	74 （16.8）	65 （23.6）	51 （25.0）	68 （31.3）
退所(院)時に本人・家族に対して通常行っている	26 （5.9）	68 （24.7）	24 （11.8）	32 （14.7）
退所(院)時に本人・家族へ要望のある際に行っている	22 （5.0）	24 （8.7）	54 （26.5）	56 （25.8）
介護支援専門員やソーシャルワーカーなどに行っている	64 （14.5）	68 （24.7）	40 （19.6）	60 （27.6）
上記のいずれも行ったことがない	142 （32.3）	26 （9.5）	47 （23.0）	24 （11.1）
退所(院)先への情報提供内容（複数回答可）	n=298	n=249	n=157	n=193
治療食の内容	126 （42.3）	204 （81.9）	131 （83.4）	131 （67.9）
栄養補給量	115 （38.6）	150 （60.2）	98 （62.4）	107 （55.4）
栄養状態	102 （34.2）	148 （59.4）	69 （43.9）	70 （36.3）
水分補給量	75 （25.2）	72 （28.9）	49 （31.2）	43 （22.3）
食事形態	214 （71.8）	223 （89.6）	127 （80.9）	138 （71.5）
嗜好や禁忌	154 （51.7）	165 （66.3）	77 （49.0）	85 （44.0）
食事時の姿勢や体位	55 （18.5）	71 （28.5）	28 （17.8）	24 （12.4）
食事時の注意事項	107 （35.9）	152 （61.0）	66 （42.0）	72 （37.3）
本人・家族への栄養指導内容	20 （6.7）	36 （14.5）	36 （22.9）	21 （10.9）
食事や栄養に関する経過	63 （21.1）	96 （38.6）	58 （36.9）	73 （37.8）
嚥下機能評価の結果	13 （4.4）	33 （13.3）	15 （9.6）	21 （10.9）
その他	14 （4.7）	7 （2.8）	6 （3.8）	13 （6.7）

「介護支援専門員や医療ソーシャルワーカーなどに情報提供している」がそれぞれ14.5％と24.7％であり，一方，「いずれも行ったことがない」がそれぞれ32.3％と9.5％であった（表3）.

療養病床（n=204）および回復期リハ（n=217）から退院先への情報提供については，「施設の体制として通常している」がそれぞれ31.4％と35.0％，「退所(院)時に本人・家族へ要望がある際に提供している」がそれぞれ26.5％と25.8％，「退所(院)先から要望がある際に行っている」がそれぞれ25.0％と31.3％であり，一方「いずれも行ったことがない」がそれぞれ23.0％と11.1％であった（表3）.

4）管理栄養士による退所(院)先への情報提供内容

特養（n=298）および老健（n=249）の管理栄養士から情報提供を行っている内容は，「食事形態」がそれぞれ71.8％と89.6％，「嗜好や禁忌」がそれぞれ51.7％と66.3％，「治療食の内容」がそれぞれ42.3％と81.9％，「栄養補給量」がそれぞれ38.6％と60.2％，「食事時の注意事項」がそれぞれ35.9％と61.0％，「栄養状態」がそれぞれ34.2％と59.4％，「水分補給量」がそれぞれ25.2％と28.9％，「食事時の姿勢や体位」がそれぞれ18.5％と28.5％であった（表3）.

療養病床（n=157）および回復期リハ（n=193）の管理栄養士から情報提供を行っている内容は，「治療食の内容」がそれぞれ83.4％と67.9％，「食事形態」がそれぞれ80.9％と71.5％，「栄養補給量」がそれぞれ62.4％と55.4％，「嗜好や禁忌」がそれぞれ49.0％と44.0％，「栄養状態」がそれぞれ43.9％と36.3％，「食事時の注意事項」がそれぞれ42.0％と37.3％，「食事や栄養に関する経過」がそれぞれ36.9％と37.8％，「水分補給量」がそれぞれ31.2％と22.3％であった（表3）.

IV. 考　察

摂食・嚥下障害を有する地域高齢者に対する継続的な栄養ケアの提供においては，食事中の体位や食事形態，嚥下機能，身体機能など多岐に及ぶ情報が重要であり[4]，医療機関，介護保険施設および在宅を通して多職種が連携し，高齢者の栄養状態の維持，改善に貢献できる体制が必要である[5]．

本研究では，高齢者医療および介護を提供する特養，老健，療養病床，回復期リハを対象施設とし，摂食・嚥下障害を有する高齢者に関する入・退所(院)時の文書による他施設，他医療機関との情報連携の現状について検討した．

本研究におけるいずれの施設種においても，摂食・嚥下障害を疑う者が「いる」割合は約9割に及んでいたものの，療養病床は他施設種に比べその割合が9割に満たなかったが，100床当りの人数が最も多かった背景には，療養病床群では医療依存度の低い(医療区分1)高齢者が入院している病床数の比較的小さい施設が1割を上回る程度含まれており，そのほかは医療依存度の高い(医療区分2～3)高齢者の入院施設である[6]ことから，全入所者に対する摂食嚥下障害を疑う者の100床当りの人数は多くなったと考えられる．

他施設(病院)との情報連携を行っている施設は，回復期リハ，老健，療養病床，特養の順に多く，上位2施設である回復期リハおよび老健においては，リハビリテーション機能が強化された病院，施設であることが情報連携状況に影響していると考えられる．

介護保険施設および病院から，「診療所」，「歯科診療所」，ならびに「地域包括支援センター」，「訪問介護事業所」などの在宅サービス関連機関への情報提供は，いずれの施設種においても1～4割程度と未だ少なく，「居宅介護支援事業所」への情報提供においても，回復期リハでは約7割の施設で行われていたが，特養，老健，ならびに療養病床では3～5割程度と十分とは言えない．

また，情報提供先施設からの情報提供内容として，「摂食・嚥下機能の状態」が，特養と老健において差異がみられたが，特養は老健に比して介護度の高い高齢者が多く，摂食・嚥下機能障害を有する高齢者も多いことが推察され，情報提供内容には利用者の摂食・嚥下機能について言及する機会が老健に比べ多くなったと考えられる．一方，「嚥下機能評価の結果」においても，療養病床と回復期リハにおいて差異がみられたが，療養病床群に比べ回復期リハ群では言語聴覚士の配置が多く，嚥下機能評価体制が機能していることが本研究でも確認され，情報提供内容として「嚥下機能評価の結果」に2施設間で差異がみられたと考えられる．

また，管理栄養士からの情報提供は，いずれの施設種においても，「食事形態」，「栄養補給量」，「治療食の内容」，「食事時の注意事項」，「嗜好や禁忌」，「食事や栄養に関する経過」，「水分補給量」などの多岐に渡ってすべての項目が求められていたが，摂食・嚥下障害を有する高齢者の入・退所(院)時の文書情報による連携があった施設は，特養，老健，療養病床の5～6割に過ぎず，回復期リハにおいては約8割であった．しかも，この文書による情報連携に関わっていた「管理栄養士」はその3～6割程度であり，回復期リハにおいては最も低率であった．これは，回復期リハでは，他施設種に比べ平均在院日数が短く，病床回転率も高いことから，現在の管理栄養士配置数では，患者退院時に個別に管理栄養士が対応することは困難な状況にあること，また，退院時の栄養食事指導や栄養に関する情報提供は，制度上も必須とされていないためと推察される．

さらに，管理栄養士による利用者の退所先への情報提供は，「施設(病床)の体制として通常している」施設は，全施設種において3～5割程度に過ぎず，特養においては，「いずれも行ったことがない」施設が3割を上回っていた．情報連携がある施設においても「食事形態や食事内容」，「摂食・嚥下機能の状態」は伝達されているものの，「栄養アセスメントの内容」，「栄養ケア計画の内容」，「モニタリングの内容」についての情報提供が行われている施設は少なかった．また，管理栄養士の情報提供内容として，「治療食の内容」，「栄養補給料」，「食事時の注意事項」「栄養状態」などにおいて，老健が特養に比して多かった要因としては，老健では，医師，看護職，リハビリテーション職員の常勤配置が設置条件であるため，医師からの治療食などに関する指示が得られやすく，また，医師，看護職，リハビリテーション職によるチーム体制に管理栄養士が同様に参加することによって，栄養情報の水準を高めていること，さらに，3カ月後には在宅への退所を目的とした中間施設であることから，栄養改善に関わる詳細な情報提供の必要性がチームの共通の認識になってきていると考えられる．一方，特養では医師は非常勤体制であり，管理栄養士は医師からの指示を得ることが困難な場合が多く，また，職員も福祉職が中心となっており，未だ栄養情報提供に対する必要性がチームの共通の認識になっていないことや，要介護度の重度化した高齢者には栄養改善の困難者も多いことが原因と考えられる．

摂食・嚥下障害を有する高齢者にとって，その機能に応じた食事形態が提供されることは，高齢者のQOLの維持，向上[7, 8]，ならびに栄養状態の改善に寄与する[9, 10]ことから，食事形態に関する情報提供は重要であるが，個々の施設により食事形態の区分や用語がさまざまに用