

Figure 1 Food diversity increased with chewing ability.
*Statistically significant by Tukey's honestly significant differences post-hoc test.

The results also show an association between low chewing ability and less ability to carry out ADL, including less ability to carry out self-maintenance tasks and to engage in intellectual activity. This finding suggests that elderly persons who can continue to carry out ADL, such as cooking and using public transportation, are more motivated to maintain their oral health and face fewer barriers to engaging in preventive actions, such as brushing their teeth well or seeing their dentists. The elderly persons with higher ability to engage in intellectual activity are considered to be relatively more able to consume health-related information and to be more concerned with their oral health.

The identification of an association between depressive mood, as screened by the GDS-15, and low chewing ability agrees with the findings of a previous study by the authors of the present study.¹ However, the previous study assessed chewing ability by self-report measures, and as the subjective sense of chewing difficulty can be affected by mood, depressed participants might have answered negatively to questions on the basis of their mood rather than providing true data regarding their chewing ability. Using objective measures, the present study confirmed the existence of an association between chewing ability and depression. As more women than men were included in the present study, the effect of sex on depression, which has been found to be more prevalent in women,¹⁰ was considered by adjusting for sex. After making this adjustment, a significant relationship was still observed between low chewing ability and depression ($P = 0.002$).

The results of the present study show that cognitive status as assessed by the MMSE, HDSR and FAB is

related to chewing ability. They agree with the findings of several previous studies that identified relationships between cognitive status and indicators of oral health among the elderly, including a relationship between the number of teeth and dementia,¹⁸ as well as between bite force, occlusal contact area, and self-rated mastication and cognitive functioning.¹⁹ The present study supports and adds to the significance of previous research by identifying an association between chewing ability and cognitive functioning in the community-dwelling elderly.

The present study also identified important relationships between food intake and chewing ability. The results indicate a relationship between low chewing ability and a less varied diet, which is associated with lower health status¹⁵ and even mortality²⁰ in elderly individuals. The results regarding frequency of food intake suggest that experiencing chewing difficulty might lead to avoidance of hard foods, such as beans, vegetables and nuts. As the present study was a cross-sectional study, the possibility of an opposite causal association should be considered, as less frequent intake of vegetables might lead to lower chewing ability. Indeed, one longitudinal study identified a negative correlation between vegetable intake and the risk of periodontal disease events.²¹ Nevertheless, masticatory performance has been reported to relate with nutritional status as evaluated by bodyweight and mid-upper arm circumference,⁵ which supports the findings of the present study and indicates that, because of its relationship with food insufficiency, low chewing ability might be an indicator of risk of malnutrition among the elderly in the community.

A higher proportion of participants with high chewing ability were found to be employed or to engage in farming, which suggests that elderly persons who can work might have higher physical ability, resulting in better oral health. Previous research has suggested that dental occlusion is associated with physical fitness.^{22,23} The finding of a relationship between high chewing ability and greater physical activity can be also explained by this association.

Although the results of the present study showed no significant relationship between chewing ability and lifestyle-related diseases, previous studies have reported relationships between periodontal disease and lifestyle-related diseases.^{24,25} Among them, one analysis of national data found that individuals aged 18–64 years with severe periodontitis have a higher risk of poorer glycemic control than those without severe periodontitis, but could not confirm the existence of this relationship among individuals aged over 65 years.²⁶ These results might indicate that despite the strong focus on examination of lifestyle-related diseases, it does not have such a strong impact on oral health, especially among the older-elderly population.

Table 3 Comparison of food diversity score and frequency of food intake in 11 food groups between elderly with low and high chewing ability

	Chewing ability		<i>P</i> -value
	Low (score 1–3) (<i>n</i> = 105)	High (score 4, 5) (<i>n</i> = 164)	
FDSK-11 (range 0–11)	9.8 ± 1.6	10.5 ± 0.8	<0.001
Frequency of food intake (range 0–4)			
Grains	3.9 ± 0.2	3.9 ± 0.3	0.250
Potato	2.3 ± 0.6	2.5 ± 0.7	0.068
Beans	3.0 ± 0.9	3.3 ± 0.7	0.006
Meat	2.5 ± 1.1	2.6 ± 0.7	0.080
Seafood	3.0 ± 0.9	3.0 ± 0.8	0.922
Egg	2.9 ± 0.8	2.9 ± 0.8	0.700
Dairy	2.8 ± 1.2	2.9 ± 1.0	0.204
Vegetables	3.4 ± 0.7	3.7 ± 0.5	0.005
Seaweed	2.6 ± 0.9	3.0 ± 0.7	<0.001
Nuts	2.1 ± 0.8	3.4 ± 0.7	0.002
Fruit	2.9 ± 0.8	3.0 ± 0.7	0.678

Values presented as mean ± standard deviation. Frequency of food intake in 11 food groups was assessed by the question “how often do you eat these foods in a week?” with the answer “everyday: score 4”, “often (3–5 days/week): score 3”, “sometimes (1–2 days/week): score 2”, and “hardly eat: score 1” for each 11 food groups. FDSK-11, 11-item Food Diversity Score Kyoto.

Table 4 Comparison of lifestyle characteristics and prevalence of lifestyle-related diseases between elderly with low and high chewing ability

	Chewing ability		<i>P</i> -value
	Low (score 1–3) (<i>n</i> = 105)	High (score 4, 5) (<i>n</i> = 164)	
Lifestyle characteristics			
School year (mean ± SD)	8.7 ± 1.8	9.1 ± 2.0	0.094
Good economic status (%)	25.5	31.1	0.387
Living alone (%)	31.6	23.5	0.103
Eating alone (%)	52.0	47.8	0.071
Work or farming more than once a week (%)	62.1	83.2	<0.001
Exercise more than once a week (%)	61.2	75.5	0.032
Drinking alcohol (%)	29.7	37.5	0.225
Current smoker (%)	2.0	6.6	0.079
Lifestyle-related diseases			
Hypertension (%)	69.0	69.8	0.91
Hypercholesterolemia (%)	38.5	39.6	0.89
Obesity (%)	22.0	23.1	0.87
Diabetes mellitus (%)	13.8	14.6	0.88
Diabetes mellitus & impaired glucose tolerance (%)	31.5	31.3	1.00

The methods by which gum color gradation was evaluated to score chewing ability could have been a limitation that affected the results of the present study. Specifically, the determination of the color gradation and the assigning of a score between 1 and 5 was carried out by a dentist rather than a machine, as it had been in previous studies, although it is unclear whether the human eye can judge the extent of color gradation as accurately as a machine. Nevertheless, the use of only one dentist to carry out the color discrimination process ensured a certain amount of consistency among the results of the process. Furthermore, the fact that the study results agreed with those of previous studies shows that this method of evaluating chewing ability is a reliable yet simple means of simultaneously assessing oral health and carrying out CGA in a community setting. The relatively small study population and the inclusion of only participants who had undergone CGA might have also been study limitations. Future studies must therefore endeavor to study larger samples that include non-CGA participants, who might be more likely to be less concerned with their dental health and might not have visited a dental clinic for a long period.

In conclusion, the study results show that low chewing ability, as evaluated by using color-changeable gum, is associated with lower ability to carry out ADL, lower cognitive functioning, higher risk of depression, and greater food insufficiency in the community-dwelling elderly population. As such, more attention should be paid to assessing the chewing ability of elderly persons, in relation to assessing comprehensive geriatric functions in community settings.

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Disclosure statement

No conflict of interest to declare.

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ORIGINAL ARTICLE: EPIDEMIOLOGY,
CLINICAL PRACTICE AND HEALTH

Importance of cognitive assessment as part of the “Kihon Checklist” developed by the Japanese Ministry of Health, Labor and Welfare for prediction of frailty at a 2-year follow up

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Aim: To investigate which category in the “Kihon Checklist” developed by the Japanese Ministry of Health, Labor and Welfare can predict functional decline for community-dwelling elderly people at a 2-year follow up.

Method: We compared comprehensive geriatric assessment (CGA) between “specified elderly individuals” at high risk of requiring long-term care insurance (LTCI) and “uncertified elderly people” (neither certified under LTCI nor “specified”), and also compared CGA between the risk group and non-risk group, in subcategories of the “Kihon Checklist”, such as physical strength, nutrition/oral function, overall low score on questions 1–20, houseboundness, cognitive function, and depression risk. The study population consisted of 527 elderly participants aged 75 years and older in a cross-sectional study, and 382 in a longitudinal study. CGA was assessed for basic and higher functional activities of daily living (ADL), depressive symptoms, and quality of life (QOL). The Student's *t*-test was used in the cross-sectional study and ANOVA with repeated measures was used in the longitudinal analysis.

Results: In the cross-sectional study, the risk group had lower functions in all CGA items than the non-risk group in all subcategories of the “Kihon Checklist.” In the longitudinal study, Tokyo Metropolitan Institute of Gerontology Index of Competence scores and its three subscales declined in the risk group both in physical and cognitive subcategories compared with the non-risk group, whereas only one or two subscales of Tokyo Metropolitan Institute of Gerontology Index of Competence declined in “specified” and the other two subcategories of the Kihon Checklist

Conclusion: In both cross-sectional and longitudinal studies, the assessment of physical strength and cognitive function was more useful to detect frail elderly. **Geriatr Gerontol Int 2013; 13: 654–662.**

Keywords: community-dwelling older people, comprehensive geriatric assessment, Long Term Care Insurance, the Kihon Checklist.

Introduction

Elderly people have been defined as persons aged 65 years or older in developed countries.¹ According to the Japanese national census, the percentage of the elderly in Japan was 23.0% of the total population in 2010.² Furthermore, the Japanese National Institute of Population and Social Security Research also expects the segment of the population known as “the fourth age” (i.e. 75

years or older) to double in the coming 20 years, increasing by 10 million. This group of people will then outnumber those in “the third age” (65–74 years).³ The prevalence of older people in Japan requiring support/care under the long-term care insurance system (LTCI) is much more (29.2%) in people aged 75 years or older than in people aged 65–74 years (4.3%).⁴ Thus, a preventive approach to disability in the older elderly population is very important for LTCI in Japan. Since 2006, a major reform of the LTCI has been implemented, focusing on preventive care as well as the improvement of quality of care by means of early detection of elderly people at high risk for future decline in basic or advanced activities of daily living (ADL). These high-risk people are described as “specified elderly individuals” (new term: *Niji Yobo Koureisya*, previous term:

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Tokutei Koureisya) by the Japanese Ministry of Health, Labour and Welfare.

The goal of this approach is to prevent these people from becoming dependent in ADL by providing services intended to improve physical strength, nutritional status, oral function, cognitive function and depression risk, including prevent from houseboundness.⁵ These intervention programs have been provided to “specified elderly individuals” and other people at high risk by municipal governments.⁶ Although this approach has been in place for more than 5 years, just two major studies have evaluated the “Kihon Checklist” using biomarkers and a frailty index to predict the risk of requiring care under the LTCI.^{7,8} However, little is known about which categories in the “Kihon Checklist” are important and useful for early detection of elderly people with high risk for future deterioration in ADL.

The aim of the present study was to investigate which categories in the “Kihon Checklist” best predict decline in ADL using comprehensive geriatric assessment (CGA) for community-dwelling elderly people living in a rural town, both in a cross-sectional and a 2-year longitudinal study.

Methods

Participants

The cross-sectional study population consisted of 527 community-dwelling elderly adults aged 75 years or

older who had not been certified under the LTCI (male : female = 209:318; mean age 81.1 ± 4.8 years) living in the town of Tosa in Kochi Prefecture in 2008 (response rate: 58.4%). The longitudinal study population consisted of 382 people (male : female = 151:231; mean age 80.6 ± 4.5 years) who responded both in 2008 and in 2010. This town had a total population of 4576 in 2008, of which 1040 (22.7%) were aged 75 years or older, meaning it can be regarded as a “super-aged town.” A total of 527 participants in the baseline cross-sectional study completed a questionnaire including the 25-item “Kihon Checklist” in 2008, with the exclusion of 138 institutionalized people, 83 already certified under the LTCI and 292 who did not complete the questionnaire, out of 902 eligible individuals aged 75 years or older (Fig. 1).

The Kihon Checklist

The “Kihon Checklist” is a 25-item self-reported questionnaire for screening out “specified elderly individuals.” The checklist uses seven categories: physical strength, nutritional status, oral function, overall low score on questions 1–20, houseboundness, cognitive status and depression risk. Each category was rated on a pass/fail basis, and the sum of all indices ranged from 0 (no frailty) to 25 (high frailty). “Specified elderly” were defined by the criteria of the Ministry of Health, Labor and Welfare (MHLW) as those who show lower function in at least physical strength, nutritional status, oral

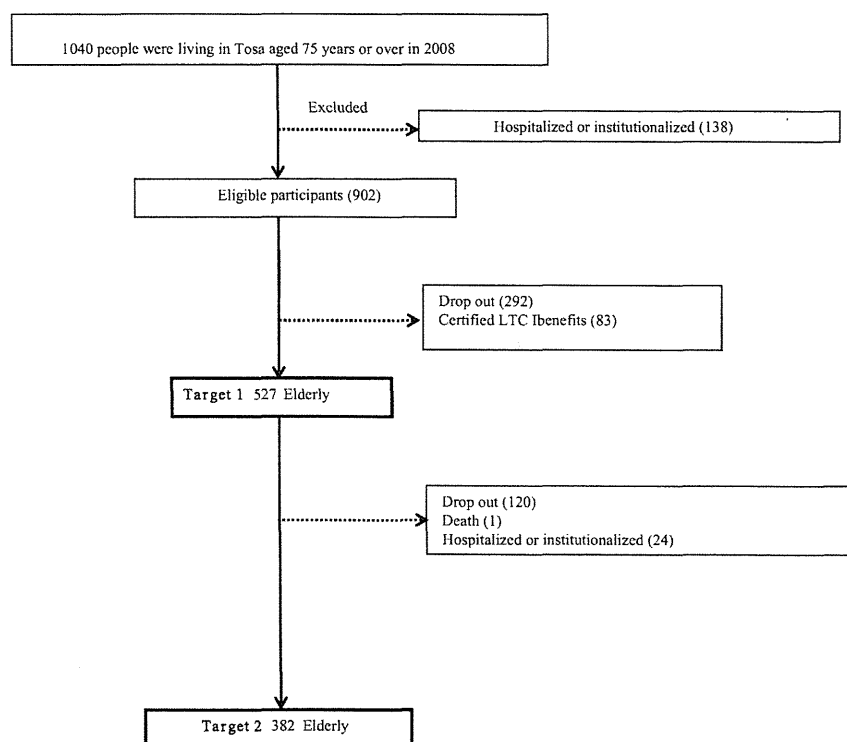


Figure 1 The process of selecting the cross-sectional and longitudinally analyzed population. LTCI, long-term care insurance.

1	Do you use public transportation (bus or train) to go out on your own?	
2	Do you shop for daily necessities?	
3	Do you manage financial matters such as savings or deposits by yourself?	
4	Do you visit the homes of friends?	
5	Do you give advice to friends or family members who confide in you?	
6	Are you able to go up stairs without using handrails or the wall for support?	
7	Are you able to stand up from a sitting position without support?	Physical strength
8	Are you able to walk continuously for 15 minutes?	
9	Have you experienced a fall in the past year?	
10	Do you feel anxious about falling when you walk?	
11	Has your weight declined by 2-3 kg in the past 6 months?	Nutritional status
12	Height: cm Weight: kg BMI	
13	Have you experienced more difficulty chewing tough foods than you did 6 months ago?	
14	Do you ever experience choking or coughing when drinking tea or soup?	Oral function
15	Are you bothered by feelings of thirst or dry mouth?	
16	Do you go out at least one time a week?	Houseboundness
17	Do you go out less often than you did last year?	
18	Do others point out your forgetfulness or tell you "You always ask the same thing."	
19	When you want to make a call, do you usually search for the telephone number and call on your own?	Cognitive function
20	Do you sometimes not know what the date is?	
21	(in the past 2 weeks) You feel no sense of fulfillment in your life.	
22	(in the past 2 weeks) You cannot enjoy things that you enjoyed before.	Depression risk
23	(in the past 2 weeks) Things that you could do easily before are now difficult.	
24	(in the past 2 weeks) You do not feel that you are a useful person.	
25	(in the past 2 weeks) You feel exhausted for no apparent reason.	

Overall low score on questions 1-20

Figure 2 Kihon Checklist. The Kihon Checklist consists of 25 items and seven categories (physical strength, nutritional status, oral function, overall low score on question 1-20, houseboundness, cognitive function, depression risk) for screening out "specified elderly" individuals. BMI, body mass index.

function and overall low score on questions 1-20. Elderly individuals who were neither certified nor specified were defined as "uncertified elderly." "Low physical strength" was defined as three or more negative responses in questions 6-10. "Low nutritional status" was assessed by answers to questions 11 and 12, with negative answers indicating lower status, and "low oral function" was defined as two or more negative responses in questions 13-15. "Overall low score on questions 1-20" was defined as elderly participants who answered at least 10 or more negative conditions (questions 1-20) and "houseboundness" referred to people who answered "no" to question 16. "Low cognitive function" referred to participants who had at least one or more negative conditions in questions 18-20, and "depression risk" referred to elderly people who had two or more negative responses (questions 21-25). "Lack of response" was defined as a negative response to any question (Fig. 2).⁹ We classified people by these criteria into a "risk group" and a "non-risk group". We combined the two groups in low nutritional and oral function, because these were only a few numbers in the low nutritional category. The MHLW "specified" category and the six "Kihon Checklist" categories were assessed in both the cross-sectional and the longitudinal studies.

Comprehensive geriatric assessment

Items used for the CGA included ADL, depressive symptoms and quantitative subjective quality of life (QOL). Both basic and advanced ADL were assessed. Basic ADL (BADL) were the scores for seven items (walking, ascending and descending stairs, feeding, dressing, using the toilet, bathing, and grooming) rated

on independence using a 0-3 scale as follows: 0 (completely dependent), 1 (needs a great deal of help), 2 (needs some help) and 3 (completely independent), for a total score out of 21.¹⁰ For higher-level functional capacity, each participant was rated on independence of Tokyo Metropolitan Institute of Gerontology Index of Competence (TMIG-IC). This assessment consists of 13 items, all rated on a yes/no basis and including three subscales: (i) self-maintenance (IADL; five items: ability to use public transport, to buy daily necessities, to prepare a meal, to pay bills and to handle banking matters); (ii) intellectual activity (four items: ability to fill out forms, to read newspapers, to read books or magazines and to have an interest in television programs or news articles on health-related matters); and (iii) social role (four items: ability to visit friends, to give advice to relatives and friends, to visit someone at the hospital and to initiate conversations with younger people).¹¹ Depressive symptoms were assessed using the Japanese version of the 15-item Geriatric Depression Scale (GDS-15).^{12,13} QOL was assessed using a 100-mm visual analog scale (VAS; worst QOL on the left end of the scale, best on the right) for the following five items: subjective sense of health, family relationship, relationship with friends, financial status and subjective happiness.^{14,15}

Statistical analysis

In cross-sectional analysis, ADL, depressive symptoms and QOL indicators were analyzed by Student's *t*-tests between the risk and non-risk groups for the seven categories of the "Kihon Checklist" including to identify "specified" elderly people. In the longitudinal study, a

two-way ANOVA with repeated measures was used to assess changes over 2 years between the risk and non-risk groups. Statistical analysis was carried out by SPSS version 17 for windows (SPSS, Chicago, IL, USA). Results were expressed as means and SD. Any *P*-value less than 0.05 indicated statistical significance.

Results

Table 1 shows the comparison of functional abilities between “specified” and “uncertified” elderly people (aged 75 years or older in 2008), and between non-risk and risk groups in each category, in the “Kihon Checklist.” Individuals in the risk group in each category and “specified” elderly individuals were older and had lower scores in BADL, TMIG-IC and in its three subscales, and each subjective QOL item, and higher scores in GDS-15 compared with the non-risk group and uncertified elderly.

Table 2 shows a longitudinal comparison of significant ANOVA showed no significant group \times time interaction between the two groups in “nutrition/oral function” or “houseboundness.” The “low physical strength” and “low cognitive function” groups showed significant declines in TMIG-IC scores and all its subscales compared with each non-risk group. “Specified” individuals had significant declines in intellectual activity and social role (but no other variables) over 2 years compared with uncertified elderly. The “overall low score on questions 1–20” group significantly declined in social role only. Participants with low high-depression risk showed a significant decline in scores for IADL and social role.

Figure 3 shows a Venn diagram for “specified elderly individuals” or elderly individuals with low physical and low cognitive function. Out of 247 elderly participants with low cognitive function, 160 were classified as a risk group under “specified.”

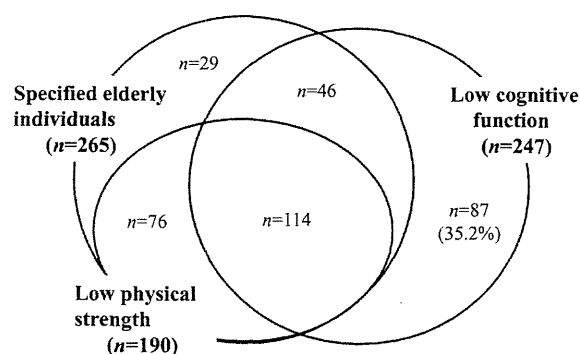


Figure 3 Specified elderly individuals with/without low physical function or low cognitive function. Venn construction for three sets: “specified elderly” individuals, physical strength and cognitive function.

Discussion

This is the first study to identify the characteristics of older people categorized by the “Kihon Checklist” using academic CGA both in cross-sectional and in longitudinal (over 2 years) analysis. CGA were compared between “specified” and “uncertified” elderly, and between risk and non-risk groups in each category of the “Kihon Checklist” among community-dwelling elderly people aged 75 years. In the cross-sectional study, risk groups in all categories in the “Kihon Checklist” were shown to be associated with lower ADL, lower subjective QOL scores and higher scores in GDS. The application of the risk groups in the “Kihon Checklist” categories could adequately screen elderly participants with lower functional abilities from the standpoint of re-assessment by CGA in the cross-sectional study.

However, in the longitudinal analysis, the assessment based on the “Kihon Checklist” could not predict BADL decline in 2 years, whereas several categories could predict a significant decline in IADL, intellectual activity, social role and TMIG-IC scores. It has been reported that independent elderly people living in rural areas first see declines in intellectual activity in higher-level functional ADL.¹⁶ In the present study, the five categories of “specified,” “physical,” “overall low score on questions 1–20,” “cognitive function” and “depression risk” could predict functional declines in social roles. It is considered that people in the risk groups screened by the “Kihon Checklist” might have declined in social role at the beginning. Focusing on the social role, it has long been known as an essential component of healthy aging,¹⁷ and older people with a high level of social activity preserved independence in BADL and IADL.¹⁸ The result in our cross-sectional analysis showed that “specified elderly” and all risk groups in the “Kihon Checklist” had significant lower functions compared with the non-risk groups. In addition, as aforementioned, those five categories (“specified,” “physical,” “overall low score on questions 1–20,” “cognitive” and “depression”) were also able to predict functional decline in social role over 2 years. It is suggested that people with those lower functions (i.e. lower physical strength, nutritional/oral function, cognitive function and depression risk) experience an accelerated decline in social role.

Furthermore, elderly people with lower scores in social role or intellectual activity at baseline have also seen the onset of IADL disability in previous reports.^{16,19} Other studies also have shown that disability in IADL was associated with mortality among older people.^{20,21} The present results showed that just two categories, “physical strength” and “cognitive function,” could screen older people with significant potential declines in all advanced ADL in the longitudinal study. The present

Table 1 Comparison of functional abilities in community-dwelling elderly for each category of the “Kihon Checklist”

	Specified <i>vs</i> uncertified elderly individuals		Defined subcategories of “Specified elderly individuals”									
	Uncertified elderly <i>n</i> = 262	Specified elderly individuals <i>n</i> = 265	(1) Physical strength		(2) Nutrition/oral function		(3) Overall low score on questions 1–20					
			Non-risk group <i>n</i> = 337	Risk group <i>n</i> = 190	Non-risk group <i>n</i> = 379	Risk group <i>n</i> = 148	Non-risk group <i>n</i> = 341	Risk group <i>n</i> = 186				
Age (mean ± SD)	80.4 ± 4.4	81.7 ± 5.1	*	80.5 ± 4.4	82.2 ± 5.3	*	80.9 ± 4.7	81.6 ± 5.0	NS	80.3 ± 4.6	81.5 ± 5.2	NS
Sex (male : female)	122:140	87:178	*	147:190	62:128	*	153:226	56:92	NS	150:191	59:127	*
Functional Ability Score												
BADL (0–21)	20.7 ± 0.9	18.8 ± 3.3	† *	20.6 ± 1.0	18.2 ± 3.7	† *	20.1 ± 2.1	19.0 ± 3.5	*	20.2 ± 1.9	18.9 ± 3.4	*
TMIG-IC (0–13)	11.5 ± 2.1	9.6 ± 3.6	† *	11.5 ± 2.0	8.8 ± 3.9	† *	10.9 ± 2.8	9.7 ± 3.5	*	10.8 ± 2.9	10.0 ± 3.3	*
Self-maintenance (0–5)	4.7 ± 0.9	3.9 ± 1.6	† *	4.7 ± 0.8	3.6 ± 1.8	† *	4.4 ± 1.3	4.1 ± 1.5	*	4.4 ± 1.3	4.1 ± 1.4	*
Intellectual activity (0–4)	3.3 ± 1.0	2.8 ± 1.3	† *	3.3 ± 1.0	2.6 ± 1.3	† *	3.2 ± 1.1	2.7 ± 1.3	*	3.2 ± 1.1	2.8 ± 1.3	*
Social role (0–4)	3.5 ± 0.9	2.9 ± 1.3	† *	3.5 ± 0.9	2.6 ± 1.4	† *	3.3 ± 1.1	2.9 ± 1.3	*	3.3 ± 1.1	3.0 ± 1.2	*
GDS-15 (0–15)	3.4 ± 3.1	6.4 ± 3.9	*	4.0 ± 3.4	6.7 ± 3.9	*	4.3 ± 3.5	6.4 ± 4.0	*	3.9 ± 3.5	6.7 ± 3.7	*
Subjective QOL (0–100)												
Subjective health	61.5 ± 17.8	45.4 ± 17.7	*	58.8 ± 18.1	44.0 ± 18.6	*	56.7 ± 19.7	45.3 ± 16.2	*	58.3 ± 18.7	44.8 ± 17.9	*
Family relationship	84.0 ± 15.5	73.5 ± 22.8	*	80.2 ± 18.3	74.7 ± 22.2	*	80.2 ± 18.8	72.9 ± 21.8	*	80.0 ± 18.8	74.9 ± 21.5	*
Friend relationship	80.8 ± 17.1	70.7 ± 22.4	*	79.2 ± 18.2	69.6 ± 23.0	*	78.2 ± 19.0	69.6 ± 22.9	*	78.9 ± 18.7	70.2 ± 22.5	*
Financial satisfaction	56.9 ± 24.2	48.5 ± 23.0	*	55.3 ± 24.0	48.2 ± 23.3	*	53.8 ± 23.9	50.2 ± 24.0	*	55.5 ± 23.8	47.5 ± 23.5	*
Subjective happiness	66.7 ± 20.0	56.1 ± 23.0	*	64.5 ± 21.7	55.9 ± 22.0	*	63.7 ± 21.2	55.5 ± 23.8	*	64.7 ± 21.1	55.1 ± 22.8	*

†After adjusting for age. **P* < 0.05. BADL, basic activities of daily living; GDS-15, 15-item Geriatric Depression Scale; NS, not significant, QOL, Quality of Life; TMIG-IC is short for Tokyo Metropolitan Institute of Gerontology Index of Competence.

Table 1 Continued

	Referral subcategories of "specified elderly individuals"									
	(4) Houseboundness		NS	(5) Cognitive function		*	(6) Depression risk			
	Non-risk group n = 372	Risk group n = 155		Non-risk group n = 280	Risk group n = 247		Non-risk group n = 145	Risk group n = 382		
Age (mean ± SD)	80.9 ± 4.7	81.5 ± 4.9	NS	80.3 ± 4.1	82.0 ± 5.4	*	80.0 ± 4.9	81.5 ± 4.7	*	
Sex (male : female)	161:211	48:107	*	97:183	112:135	*	73:72	136:246	*	
Functional Ability Score										
BADL (0–21)	20.2 ± 1.9	18.8 ± 3.6	*	20.3 ± 1.4	19.1 ± 3.4	† NS	20.7 ± 1.0	19.4 ± 2.9	† NS	
TMIG-IC (0–13)	11.2 ± 2.4	8.9 ± 3.8	*	11.3 ± 2.1	9.6 ± 3.7	† NS	11.8 ± 2.0	10.0 ± 3.3	† *	
Self-maintenance (0–5)	4.6 ± 1.0	3.6 ± 1.8	*	4.6 ± 0.8	3.9 ± 1.7	† *	4.8 ± 0.7	4.1 ± 1.5	† *	
Intellectual activity (0–4)	3.2 ± 1.0	2.6 ± 1.3	*	3.3 ± 1.0	2.8 ± 1.3	† *	3.4 ± 0.9	2.9 ± 1.2	† *	
Social role (0–4)	3.4 ± 1.0	2.7 ± 1.3	*	3.4 ± 1.0	2.9 ± 1.3	† *	3.6 ± 0.8	3.0 ± 1.2	† *	
GDS-15 (0–15)	4.3 ± 3.7	6.1 ± 3.6	*	4.0 ± 3.7	5.9 ± 3.7	*	1.7 ± 1.7	6.2 ± 3.6	*	
Subjective QOL (0–100)										
Subjective health	56.0 ± 19.2	48.0 ± 19.1	*	56.7 ± 19.0	50.4 ± 19.6	*	65.0 ± 16.8	49.3 ± 18.7	*	
Family relationship	79.5 ± 19.5	75.4 ± 20.3	NS	79.4 ± 19.4	77.1 ± 20.3	NS	84.1 ± 15.5	76.1 ± 20.9	*	
Friend relationship	78.1 ± 19.3	70.1 ± 22.3	*	78.5 ± 18.7	73.1 ± 22.0	*	82.9 ± 15.7	73.3 ± 21.4	*	
Financial satisfaction	55.6 ± 23.5	45.3 ± 23.7	*	54.3 ± 23.6	51.1 ± 24.4	NS	59.9 ± 21.5	50.0 ± 24.4	*	
Subjective happiness	63.5 ± 21.7	56.4 ± 22.7	*	64.1 ± 20.8	58.6 ± 23.4	*	70.8 ± 18.3	57.8 ± 22.5	*	

Long term care insurance, Kihon Checklist

Table 2 Comparison of significant decline of functional abilities over 2 years for each category of the "Kihon Checklist"

	Specified vs Uncertified elderly individuals		Time × group	Defined subcategories of "specified elderly individuals"				Referral subcategories of "specified elderly individuals"				Time × group		
	Uncertified elderly <i>n</i> = 206	Specified elderly individuals <i>n</i> = 176		(1) Physical strength		(3) Overall low score on questions 1–20		(5) Cognitive function		(6) Depression risk				
			Non-risk group <i>n</i> = 264	Risk group <i>n</i> = 118	Time × group	Non-risk group <i>n</i> = 287	Risk group <i>n</i> = 95	Time × group	Non-risk group <i>n</i> = 219	Risk group <i>n</i> = 163	Time × group	Non-risk group <i>n</i> = 112	Risk group <i>n</i> = 270	Time × group
Age (mean ± SD)														
Baseline	80.0 ± 4.7	81.4 ± 4.7		80.2 ± 4.2	81.6 ± 4.9		80.4 ± 4.3	81.2 ± 5.0		80.0 ± 3.9	81.5 ± 5.0		79.6 ± 4.4	81.1 ± 4.4
Sex (male : female)	96:110	55:121		116:148	35:83		124:163	27:68		76:143	75:88		57:55	94:176
BADL (0–21)														
Baseline	20.7 ± 0.7	19.3 ± 2.7	0.51	20.7 ± 0.8	20.1 ± 2.0	0.43	20.2 ± 1.7	19.5 ± 2.7	0.46	20.4 ± 1.2	19.6 ± 2.7	0.47	20.7 ± 1.0	19.8 ± 2.3
2 years later	20.4 ± 2.2	18.8 ± 3.5		20.3 ± 2.4	19.7 ± 3.0		19.8 ± 3.0	19.4 ± 3.0		20.1 ± 2.2	19.1 ± 3.8		20.5 ± 1.5	19.7 ± 3.0
TMIG-IC (0–13)														
Baseline	11.7 ± 1.8	10.0 ± 3.3	0.33	11.6 ± 1.9	9.0 ± 3.7	0.035	11.1 ± 2.6	10.5 ± 2.8	0.41	11.0 ± 2.6	10.7 ± 2.8	0.004	11.8 ± 1.9	10.5 ± 2.9
2 years later	11.3 ± 2.3	9.3 ± 3.7		11.2 ± 2.3	8.1 ± 4.3		11.3 ± 2.3	9.3 ± 3.7		11.3 ± 2.2	8.8 ± 4.0		11.6 ± 2.3	9.9 ± 3.4
Self-maintenance (0–5)														
Baseline	4.8 ± 0.7	4.1 ± 1.5	0.87	4.7 ± 0.8	3.8 ± 1.7	0.019	4.5 ± 1.2	4.4 ± 1.2	0.36	4.5 ± 1.2	4.4 ± 1.2	0.002	4.7 ± 0.7	4.3 ± 1.3
2 years later	4.6 ± 1.0	4.0 ± 1.6		4.6 ± 0.9	3.6 ± 1.8		4.6 ± 1.0	4.3 ± 1.3		4.6 ± 0.9	3.8 ± 1.8		4.7 ± 0.8	4.1 ± 1.5
Intellectual activity (0–4)														
Baseline	3.5 ± 0.9	3.1 ± 1.1	0.001	3.4 ± 0.9	2.7 ± 1.3	0.001	3.2 ± 1.0	3.0 ± 1.2	0.48	3.4 ± 0.9	2.9 ± 1.2	<0.001	3.5 ± 0.9	3.1 ± 1.1
2 years later	3.4 ± 1.0	2.9 ± 1.3		3.3 ± 1.0	2.5 ± 1.4		3.2 ± 1.1	2.8 ± 1.3		3.4 ± 0.9	2.6 ± 1.4		3.3 ± 1.1	3.0 ± 1.3
Social role (0–4)														
Baseline	3.5 ± 0.8	3.0 ± 1.2	0.001	3.5 ± 0.8	2.7 ± 1.3	0.004	3.3 ± 1.0	3.2 ± 1.1	0.027	3.4 ± 0.9	3.0 ± 1.2	<0.001	3.6 ± 1.1	3.2 ± 1.1
2 years later	3.4 ± 1.0	2.6 ± 1.4		3.3 ± 1.0	2.3 ± 1.5		3.2 ± 1.1	2.7 ± 1.4		3.3 ± 0.9	2.5 ± 1.4		3.5 ± 0.9	2.8 ± 1.3

The *P*-value for time × interaction was <0.05. BADL, basic activities of daily living; TMIG-IC, Tokyo Metropolitan Institute of Gerontology Index of Competence.

study identified the categories of “physical strength” and “cognitive function” as the most important indicators for predicting advanced ADL declines.

We show here for the first time that cognitive function, as well as physical strength, is one of the most predictive indicators for a decline in advanced ADL. Of note is the fact that “elderly persons with lower cognitive function” were not necessarily “specified” elderly – in the present study, 35.2% (87/247) of elderly persons with low cognitive function were not classified as “specified” (Fig. 3).

Day-service and live-in home healthcare intervention are available only for “specified” elderly individuals under current LTCI regulations. Currently, service for individuals for whom only physical function is expected to improve are provided mainly as day-services, and only approximately 10% of “specified” elderly participate in those programs.⁶ These services thus might not meet the demands and needs of community-dwelling older adults. Our previous study on attitudes toward disease by community-dwelling elderly in three different towns reported that the disease that Japanese elderly people least wanted to suffer was dementia rather than cancer, stroke or heart disease, showing that elderly people are anxious about cognitive impairment.²² The category of “cognitive function” consists of questions on subjective memory loss. According to several previous studies, this is closely associated with objective cognitive status in cross-sectional analysis,²³ and predicts the development of dementia after 5 years.²⁴ Two strategies are recommended from the present results, as follows. First, the category of cognitive function in the “Kihon Checklist” should be included in the definition of “specified” elderly individuals as a sub-referral tool. Second, preventive support should be provided to elderly people with cognitive impairment, who have the risk of more disability in the future.

Several study limitations should be noted. First, the present study did not evaluate all older adults certified under the LTCI. The present study population consisted of just 58.4% of the eligible population. However, most municipalities can currently evaluate only approximately 30% of eligible elderly adults in each community, as public policy for screening for “specified elderly individuals” was carried out.⁴ Second, the findings of the study were derived from only one town. However, this also means that this paper presents the actual situation in a typical rural town suffering from declining population and an increasingly aged population. Third, we excluded 120 elderly individuals who did not participate in the follow up study and 24 elderly individuals who were hospitalized or institutionalized during 2-year follow up. This exclusion might have some bias in the longitudinal study. However, rates of “specified” elderly among 120 dropped-out and 382 followed up elderly were 48%

(57/120) and 46% (176/382), respectively, without a statistically significant difference between them. And then, we could not follow up 24 hospitalized or institutionalized people during 2 years, including three “specified elderly” (12.5%), which was smaller than the follow-up rate of “specified elderly” (46%). In contrast, these results might show that “specified elderly” does not necessarily predict acute hospitalization.

In conclusion, each category in the “Kihon Checklist” is useful to detect increasing frailty in a cross-sectional analysis. However, just a few significant functional declines were detected based on each category in the 2-year follow up study. The criteria incorporating information on both physical strength and cognitive function will be a useful approach to detect frail elderly candidates for early intervention and the prevention of further functional declines.

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Disclosure statement

No conflicts of interest were disclosed.

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STUDY PROTOCOL

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The postcard intervention against depression among community-dwelling older adults: study protocol for a randomized controlled trial

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Abstract

Background: Depression in older adults deteriorates quality of life and increases morbidity, mortality, and medical expenses. Medicine and social policy should work together to decrease this burden. Existing prevention studies are often based on time-consuming psychotherapies, which therefore are not feasible for a wide application at the community level. Postcard interventions have been shown to be effective for patients after hospitalization for major depression, drug overdose, or self-harm. This paper describes the protocol of a pragmatic, randomized controlled trial designed to examine the efficacy of a postcard intervention for depression among community-dwelling individuals aged 65 years or older.

Methods/Design: This is a pragmatic, non-blinded, parallel comparison, randomized controlled trial using Zelen's design in a community setting. Participants will include community-dwelling older adults (aged 65 years or older) with limited social support (indicated by eating meals alone) and with symptoms of depression (scoring 4 or higher on the 15-item Geriatric Depression Scale (GDS)). The intervention will consist of sending postcards with handwritten messages and seasonal reports from a historical city to participants once a month for eight consecutive months. Self-addressed, stamped envelopes will be enclosed to facilitate non-obligatory replies. Primary outcomes will be changes in the GDS scores that are administered to all elderly inhabitants of the community every year as part of annual health checks. Secondary outcomes include quality of life as measured by a visual analogue scale, and self-rated basic and advanced activities of daily living. We will also examine the subjective sense of effectiveness of the intervention, recollection of the number of intervention mailings received, and the number of mailed replies as the index of the acceptability of the postcard intervention. The time \times group interaction for two consecutive years will be analyzed using a generalized linear mixed model. To detect an effect size of 0.5 at alpha error of 0.05 and statistical power of 0.80, 63 participants per group are required. Based on an estimated consent and dropout rate of 70%, a total of 180 subjects will be recruited.

Trial registration: UMIN000010529

Keywords: Depression, Non-clinical intervention, Prevention, Community, Older adults

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Background

Depression is frequent and chronic in older adults. According to research on community-dwelling older adults, the proportion of individuals reporting depressive symptoms is 2.8% to 35% [1]. The natural course of later-life depressive disorders is poor: a 6-year follow-up study showed that 76% of patients followed an unfavorable but fluctuating course or a severe chronic course of depression, and only 23% of patients experienced full remission [2].

Depression in older adults deteriorates the sufferers' quality of life (QOL) more than many other chronic diseases [3]. It gives a negative impact on patients' QOL in various ways, including wellbeing, perceived physical functioning, bodily pain, and general health perceptions [4]. The mortality rate of people with depression was found to be 1.8 times larger than that of non-depressed subjects due to suicide, unhealthy habits, and medical illnesses [5].

Depression is also costly. Depressed older adults use more outpatient resources than those without depression, including frequent appointments and increased laboratory and radiographic tests. They also have more non-specific medical complaints, and this is associated with increased total ambulatory care costs [6]. A study in the United States found that the additional medical cost per one depressed older adult was USD 686 for 1 year and USD 5,271 for 4 years [7].

As the world population continues to age, there is an urgent need therefore for medicine and social policy to find ways to reduce and prevent depression in older adults in the community.

However, to the best of the authors' knowledge, no simple, effective interventions currently exist for the prevention of depression in the elderly population [8]. The existing prevention studies have limitations in study design or rely on time-consuming psychotherapy, which is unrealistic for a community prevention program. They need weekly sessions with a duration of 45 to 120 minutes for 6 to 10 weeks [9-12], and trained workers or specialists [9,11-14]. The subjects of most of the studies were not general people in community but those with specific disease or physical symptoms such as diabetes [10], macular degeneration [11], hip fracture [15], chronic pain [12], and most of the studies recruited subjects in clinical settings [10,11,13,15]. Some studies lacks sample size calculation [9,10,12] and were quasi-randomized controlled trials [10,14].

A postcard intervention was first carried out in the United States in 1976 for suicide prevention among discharged major depression patients. Researchers sent 24 letters over 5 years and reported that this significantly decreased suicide rates for the first 2 years and tended to lower suicide rates up to 13 years in total [16,17]. Three more postcard intervention trials were conducted

in Israel and Australia in 2005, 2010, and 2011, that focused on the prevention of drug overdose or self-harm. The results showed significant decrease in the number of drug overdose episodes, and the rates of suicide ideation and suicide attempts [18-21]. The prevention of depression in patients with a recent stroke by postcard is also planned [22].

The advantage of the postcard intervention is its low personal and financial cost: it only requires paper, pencil, and postage. Therapists are not required to visit the participants and vice versa. If the postcards do not contain medical and related information, a wide range of people such as elementary school students can take part in the intervention program.

This paper describes the study protocol for a pragmatic, randomized controlled trial designed to examine the effectiveness of the postcard intervention for improvement of depression in community-dwelling individuals aged 65 years or older. This study will focus in particular on those who have increased depressive symptoms and insufficient social support at baseline, because it is expected that the intervention is more effective among such individuals.

Objectives

For community-dwelling older adults (aged 65+ years) reporting symptoms of depression and limited social support, this study aims to: (1) examine the effectiveness of a postcard intervention for the improvement of depressive symptoms; (2) evaluate the effectiveness of a postcard intervention in global geriatric health indicators such as quality of life (QOL) and the activities of daily living (ADL); and (3) assess the acceptability of the postcard intervention.

Methods and design

Ethical approval

The Institutional Review Board (IRB) of the Graduate School of Medicine, Kyoto University has reviewed and approved the study protocol and informed consent documents (E1658, 12 February 2013).

Study setting

The study will be conducted in the community of a rural town, located in the center of Shikoku, one of the four main islands in Japan. Its main industries are agriculture and forestry. It has a population of 4,407, of whom 1,711 (38.8%) are aged 65 years or older.

Our study team has been conducting a longitudinal observational study in this community since 2004, in which we administer comprehensive geriatric assessments and report results and make referral to physicians as necessary. This observational study has been approved by the IRB of the Graduate School of Medicine, Kyoto

University (E-18), and written informed consent has been obtained from all the participants.

Study design

Design overview

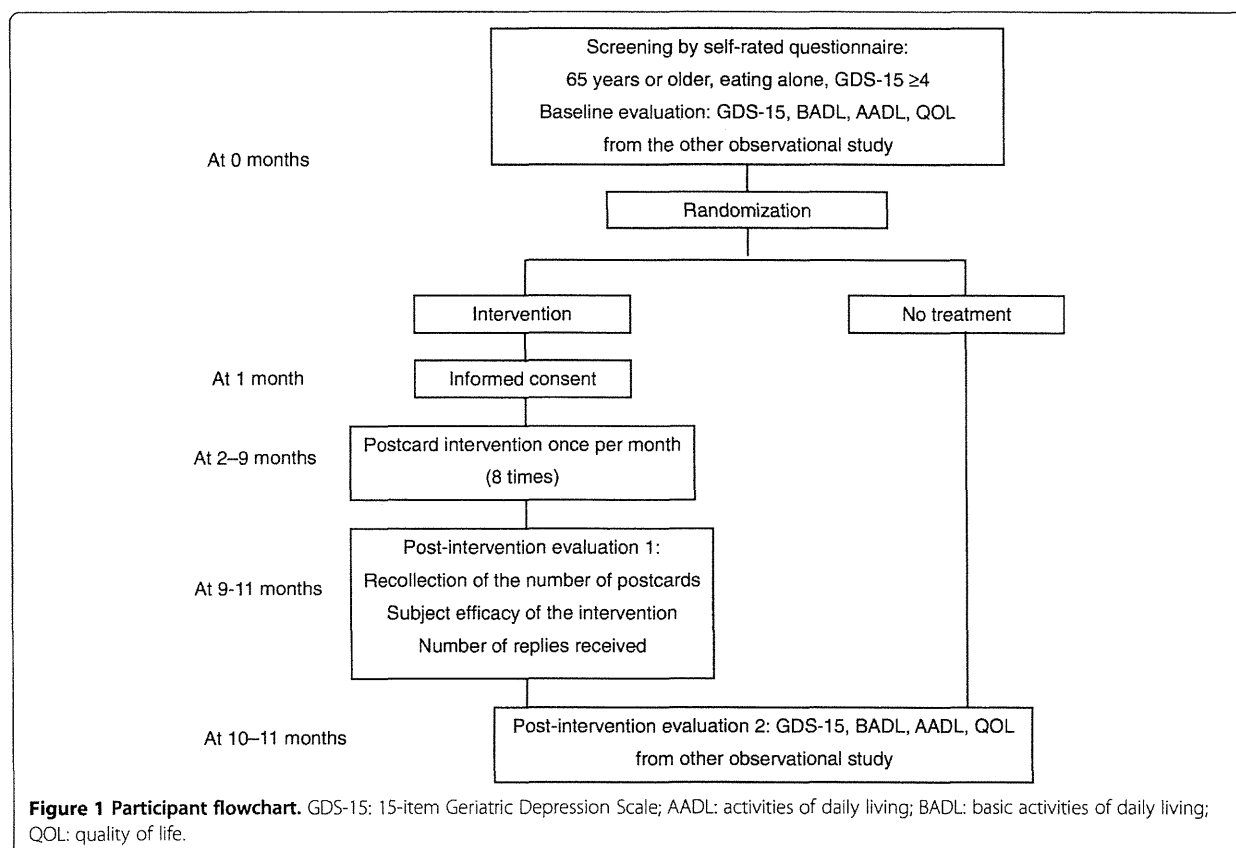
We will conduct a pragmatic, non-blinded, parallel comparison, randomized controlled trial using Zelen's design in this community. Figure 1 depicts the participants' flow. Participants will be selected based on the questionnaire surveys including a self-rated depression scale. Participants will then be randomized to the intervention or no-intervention groups at a 1:1 ratio using computer-generated random numbers. Randomization will be stratified by gender and self-rated depression scale score. To conceal group assignments, random number generation and group allocation will be conducted at the same time by an independent epidemiologist not involved in the participant recruitment or intervention or assessments. Informed consent forms will be mailed to those assigned to the intervention group. Postcards will be sent to the consenting participants once a month for eight consecutive months. They will be enclosed with a self-addressed stamped envelope to facilitate non-obligatory replies by mail. As this is a pragmatic study, any treatment outside the trial will be permitted. Self-reported

outcomes will be measured at baseline and post intervention; the questionnaire about participants' impression of effectiveness of the intervention and their recollection of the number of postcards received will be measured after treatment.

Zelen's design

The study uses a randomized controlled trial with the single consent version (Zelen's design) [23,24]. This is a variation of the standard randomized controlled design in which participants are randomized to intervention or control before consent is sought. Consent is obtained from the intervention group only after the randomization. The most important advantage of this method is that participants know the intervention they will receive at the time of consent. In a conventional randomization, participants who agree to join the study may retract their consent or continue participation with reluctance after finding out their assigned intervention, whereas the Zelen's method requires a decision only on the allocated intervention.

The main ethical concern is that consent is obtained only from the intervention group. To overcome this point, the revised Zelen method has been proposed [25]. This method is a combination of an observational study



and a randomized controlled trial. Eligible participants first consent to an observational study, and then they are randomly assigned to intervention and control groups; those in the intervention group are asked to consent to participate in the study. Those in the control arm are not informed of this, but will be followed in the observational study if they agreed. Our protocol will follow this method.

Participants

Inclusion criteria

Participants will meet the following criteria: (1) being 65 years of age or older; (2) exhibiting symptoms of depression with a score of ≥ 4 on the self-rated 15-item Geriatric Depression Scale (GDS-15); and (3) reporting that they eat meals alone in the questionnaire.

The study will include individuals with sub-threshold depression. Indicated prevention aimed at sub-threshold depression is said to be most efficient in terms of costs and benefit [26]. As there are no agreed-upon definitions of sub-threshold depression on GDS-15, the study will include those with scores ≥ 4 points on the GDS-15, which is 1 point below the established cutoff to detect major depression [27].

Considering the nature of the intervention, the study will target those who are at risk of social isolation. We hypothesize that eating alone, rather than living alone, better represents the risk of isolation. In fact, eating alone was more strongly associated with depression than living alone among community-dwelling older adults [28].

Exclusion criteria

Participants will be excluded if they cannot understand and sign the informed consent form. Those who currently reside in a hospital or institution will be excluded.

Sample size

To detect an effect size of 0.5 with $P = 0.05$ at 80% power, 63 participants are required per group. Assuming a non-consent and dropout rate of 30%, a total of 180 subjects are needed. Based on the results of our previous observational study performed in the same town in 2012, this sample size is believed to be feasible.

Intervention

Letters written on A4 paper with some colorful illustrations will be sent in a sealed envelope once a month for 8 months. The letter will be composed of two parts: the first part will be a handwritten reply to messages returned from the participants if there are replies or comments, which aims to increase social connectedness and to enhance their self-respect; the second part will be seasonal greetings or news of the month from Kyoto, Japan, where the study authors are located, printed by computer. Kyoto is one of

the most famous cultural centers in Japan and hosts various historical events that we believe will be of interest to participants living far from Kyoto.

Although a self-addressed stamped reply card will be enclosed with the letter, replying is not mandatory; this will be indicated on the reply card.

Outcomes

Primary outcomes

Primary outcomes will be the change in GDS-15 score as the measure of effectiveness.

Secondary outcomes

Secondary outcomes will be self-rated QOL as evaluated by visual analogue scales, self-rated basic ADL, and self-rated advanced ADL.

Other outcomes

The subjective sense of effectiveness of the intervention, recollection of the number of intervention mailings received, and the number of mailed replies will be evaluated to measure acceptability of the postcard intervention.

Outcome measures

GDS-15

The GDS-15 is a validated depression scale comprised of 15 items. This scale was developed to exclude the effects of non-specific somatic symptoms such as anorexia and insomnia, which are frequently observed among elderly populations [29,30]. Each item can have two answers: yes or no. The highest possible score is 15, indicating the most severe depressive state. Using a cutoff point of 5, the GDS-15 has a sensitivity of 92% and a specificity of 81% to detect major depression as ascertained by a structured clinical interview [27].

QOL

Subjective QOL will be assessed using a 100-mm visual analogue scale (lowest QOL on the left end of the scale, and highest on the right) for the following five items: subjective sense of health; relationship with family; relationship with friends; financial state; and subjective happiness [31,32].

Basic ADL (BADL)

Each participant will rate his or her independence with respect to seven items corresponding to basic activities of daily living (BADL). Specifically, these items are as follows: walking, ascending and descending stairs, feeding, dressing, going to the toilet, bathing, and grooming. Each BADL item is evaluated based on four levels of competence: 3, completely independent; 2, requiring some assistance; 1, requiring much assistance; 0, completely dependent. The scores for the seven BADL items will be summed for a total score of 0 to 21 [33,34].

Advanced ADL (AADL)

For higher-level functional capacity, the Tokyo Metropolitan Institute of Gerontology Index of Competence rating scale will be used to measure competence [35,36]. This scale consists of 13 items encompassing three sublevels of competence: (1) instrumental ADL (five items: the ability to use public transport, buy daily necessities, prepare a meal, pay bills, and handle banking matters); (2) intellectual activities (four items: the ability to complete forms, read newspapers, read books or magazines, and show interest in television programs or news articles on health-related matters); and (3) social roles (four items: the ability to visit friends, give advice to relatives and friends in confidence, visit someone at the hospital, and initiate conversation with younger people). Because each item is rated as 'yes' or 'no', instrumental ADL has a score range of 0 to 5, intellectual ADL 0 to 4, and social role ADL 0 to 4.

Sociodemographic and other information

Data about age, sex, eating alone, and living alone will be obtained through a self-reported questionnaire. Participants' subjective sense of the effectiveness of the intervention will be evaluated on a four-point scale ranging from 0 (not effective) to 4 (very effective).

Management of adverse events

We expect that no adverse events will result from the postcards. However, if an emergent situation such as a high risk of suicide is suspected based on the reply card, a certified psychiatrist will evaluate the participant and refer him/her to the hospital if needed.

Statistical analysis

The time \times group interaction for baseline and post intervention will be analyzed using a generalized linear mixed model, which enable us to analyze data even when they have missing values. Sensitivity analysis will be conducted by way of ANCOVA with data imputed by a multiple imputation method and with completer's data, using baseline data alone or with ADL score as a covariate and post-intervention data as dependent variables. The homogeneity of variance will be analyzed with Leven's test. Statistical analysis will be performed using SPSS ver. 20.0 (IBM Inc., Armonk, NY, USA).

Discussion

The study protocol describes the design of a pragmatic randomized controlled trial to verify the efficacy of postcard intervention to prevent and improve depression among community-dwelling older adults in Japan. This is the first application of the postcard intervention for depression of community-dwelling older adults. The advantage of the postcard intervention is its low human and financial

cost, which cannot be matched by other existing approaches such as psychotherapy. This intervention can be carried out by anyone who can write a letter. Its application will be broad.

There are three advantages to the study. First, the study is set in the community, whereas previous postcard interventions were conducted in clinical settings [16-19,21]. Considering the potential of postcard interventions, however, application to a broader field is desirable; the application in community settings targeting local residents is but one of them. Second, the study focuses on people who eat alone, not those who live alone. The supposed effect of postcard intervention is to make a connection with people, thereby reducing feelings of isolation. Even if a person is surrounded by many other people, he or she will be lonely unless people pay attention to him or her. In this sense, eating alone rather than living alone can reflect true isolation [28]. Third, the study will evaluate ADLs. Previous prevention studies did not consider their effect on ADLs. However, as the participants in this study are older adults whose ADLs have bidirectional interactions with depressive mood, the influence of ADLs should be considered and the effects of the intervention on AADL in particular should be evaluated.

If the efficacy of the postcard intervention for depression in community-dwelling older adults is verified, it will be a milestone in community intervention.

Trial status

Participant recruitment will begin in June 2013.

Abbreviations

GDS-15: 15-Item geriatric depression scale; AADL: Advanced activities of daily living; ADL: Activities of daily living; BADL: Basic activities of daily living; IRB: Institutional review board; QOL: Quality of life; VAS: Visual analogue scale.

Competing interests

TAF has received honoraria for speaking at CME meetings sponsored by Asahi Kasei, Eli Lilly, GlaxoSmithKline, Mochida, MSD, Otsuka, Pfizer, Shionogi, and Tanabe-Mitsubishi. He is a diplomate of the Academy of Cognitive Therapy. He has received royalties from Igaku-Shoin, Seiwa-Shoten, and Nihon Bunka Kagaku-sha. He is on the advisory board for Sekisui Chemicals and Takeda Science Foundation. The Japanese Ministry of Education, Science, and Technology, the Japanese Ministry of Health, Labor and Welfare, and the Japan Foundation for Neuroscience and Mental Health have funded his research projects. All the other authors report no competing interests.

Authors' contributions

HI and KM made substantial contribution to the conception and design of the study, were involved in drafting the manuscript, and will be responsible for the administration and direction of the study as well as the analysis and interpretation of data. TAF made a substantial contribution to the conception of the study, was involved in drafting the manuscript, and will be responsible for the analysis and interpretation of data. TF, KO, and EF assisted with the negotiation with the local government, and will be responsible for the preparation of the study materials as well as the analysis and interpretation of data. YI, YK, WC, and MM will be responsible for data collection. RS contributed to the conceptualization of the study design and will be responsible for data analysis and interpretation. All authors read and approved the final manuscript.

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認知症サポートチームと認知症初期集中支援チーム

Dementia and delirium support team and initial-phase intensive support team



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◎増加する認知症の人を地域で支えるために、多職種による仕組みが検討されてきた。そのなかで一般病院の認知症の人と医療スタッフを支える“認知症サポートチーム”と在宅での認知症の人を支える“認知症初期集中支援チーム”の試みを紹介する。認知症サポートチームに関しては「回診があることによってアドバイスを受けられてよい」「病棟スタッフもラウンドがあると思うと患者の状態をより注意深く観察するようになる」といった声以外に大声やルートトラブルに対して有用であった。初期集中支援チームにおいてはチームが介入した後もなお91%が在宅生活を継続できていた。これらのチームの有用性については引き続き検討が必要であるが、認知症の人を地域で支える有用な手段であると考えられる。



Key word : 認知症サポートチーム、認知症初期集中支援チーム、多職種連携、新オレンジプラン

認知症の人は460万人を超え、今後の推計では10年後に700万人に増加すると想定されている。認知症は病院でまれに出来る疾患ではなく、日常生活の場で出来る可能性が高い疾患となり、あらゆる職種が日常的に認知症の人への対応を迫られることになってきている。このような状況を踏まえ、厚生労働省は平成25年(2013)9月に「認知症施策推進5カ年戦略(オレンジプラン)」を策定し、さらに平成27年(2015)1月、国家戦略としてあらたに「認知症施策推進総合戦略(新オレンジプラン)」を策定した¹⁾。その柱のひとつとして、認知症初期集中支援チームが創設された。また認知症の人は長い経過のなかでさまざまな身体合併症を併発し、入院を余儀なくされることがあるが、急性期病院が認知症の人に十分対応できているかどうかには問題があるとされ、一般病院での認知症対応力の向上が強く求められている。

認知症の人に幅広く対応するためには、多職種によるチーム医療が有用であると考えられる。本稿では国立長寿医療センターで平成23年(2011)から試みてきた認知症・せん妄サポートチーム(dementia and delirium support team : D²ST)、

と平成24年(2012)から検討が開始された認知症初期集中支援チームについて解説する。

病院での多職種チーム

— 認知症・せん妄サポートチーム

認知症の人は高齢者が多く、経過中に身体合併症を生じ急性期病院での入院を余儀なくされることがあるが、入院直後のせん妄、回復期での離床・離院や転倒といった医療安全の観点からは望ましくない事象が発生することがあり、入院の継続に難渋することが珍しくない。さまざまな身体合併症を生じて入院した認知症の人の対応について、D²STを創設しその運用に関して検討を行った。

認知症の人が入院という大きな環境変化に適応できず、せん妄や行動心理症状が誘発されることは容易に理解できることであるが、現在の急性期病院において、これらの病態に十分に対応できているかという多くの問題がある。病院医療スタッフの認知症に対する理解の不足、適切なアドバイザーの不在も対応困難を助長している。これらの問題点に対応することにより、一般病棟ス