



Figure 5 Respiratory hygiene (cough etiquette).

water or clean with alcohol gel or wipes since your hands may be contaminated with secretions (Fig. 5). Elderly people who frequently cough or sneeze should be asked to wear a surgical mask provided by medical staff. Please keep a distance of more than 1 m between symptomatic subjects and others.

4. Dehydration

Signs and symptoms of dehydration

If an elderly person has some of the more severe symptoms of dehydration listed below, call medical staff immediately.

- Muscle weakness
- Physical fatigue
- Increased body temperature
- Decreased urine production
- Dry skin, even under the armpits.

Measures to prevent dehydration in shelters

- When elderly people feel thirsty, they are already dehydrated, so do not restrict water intake.
- To prevent dehydration, an elderly person without particular illness such as heart failure or kidney failure

Table 1 Risks for dehydration in the elderly

Inability to feed oneself
Appetite loss (decrease in food intake)
Swallowing problems
Diarrhea or vomiting
Thirsty or dry mouth
Taking a diuretic
Increased body temperature
Decreased urination
No air conditioning/not using air conditioning
Limitation of water intake to avoid frequent urination

simply needs to replenish fluids with at least one liter of water per day.

- When elderly people have any of the risks for dehydration listed in Table 1, they should be carefully assessed by a doctor for dehydration.

5. Malnutrition

Signs and symptoms of malnutrition

When an elderly person has any of the risks for malnutrition listed below, the person should be carefully assessed by medical staff.

- Consumed less than half the usual dietary intake for at least 1 week
- Diarrhea or vomiting for more than 2 or 3 days
- Decrease in body weight of more than 5% for 2 weeks
- Insufficient intake or dysphagia due to inadequate food
- Receiving enteral or parenteral nutrition.

Measures to prevent malnutrition in shelters

The following general precautions to prevent malnutrition should be considered:

- Adequate food supply
- Adequate types of food consumed
- Adequate feeding assistance
- Dental issues such as gum disease, cavities, and poorly fitting dentures
- Regular assessment of nutritional status and weight loss.

6. Gastrointestinal disorders

Signs and symptoms of gastrointestinal disorders

When elderly evacuees have any of the signs and symptoms of gastrointestinal disorders listed below, they should be carefully assessed by medical staff.

- Upper central abdominal pain after meals (on suspicion of stomach ulcer)
- Upper central abdominal pain when hungry (on suspicion of duodenal ulcer)
- Gastric discomfort

- Appetite loss
- Heartburn
- Tarry (black) stool or blood in the stool.

Measures to prevent gastrointestinal disorders in shelters

The following general precautions to prevent gastrointestinal disorders should be considered:

- Avoid psychological stress.
- Eat substantial meals at regular mealtimes.
- Wash hands, gargle, and disinfect cooking utensils to prevent infectious enteritis.
- Flush or discard any vomit, and change diapers with rubber gloves while wearing a flu mask. Thoroughly clean and disinfect contaminated surfaces with a bleach-based household cleaner immediately after an episode of illness.
- Drink sufficient liquid and take a lot of exercise to avoid constipation.
- Do not ignore the urge to defecate and maintain a regular bowel habit.

7. *Diabetes mellitus (DM)*

7-1). *Hyperglycemia*

Signs and symptoms of exacerbation of DM

If elderly people have any of the symptoms described below, their DM might be worsening. Please contact medical staff if any of the following symptoms are detected:

- Frequent urination
- Increasing incontinence
- Thirst
- Fatigue
- Not looking well.

Measures to prevent exacerbation of DM in shelters

- Eat meals regularly and take medication with meals.
- Patients with DM type 1 should not skip basal insulin injections.
- Drink enough water to prevent dehydration.
- If someone has a fever or little appetite, monitor blood glucose more frequently than usual or consult a doctor promptly.

7-2). *Hypoglycemia*. In addition, if elderly evacuees are taking hypoglycemic medication, be alert for symptoms of hypoglycemia.

Signs and symptoms of hypoglycemia

The symptoms described below might be caused by hypoglycemia. Please contact medical staff if any of the following symptoms are detected:

- Strong feeling of hunger
- Cold sweats
- Palpitations
- Weakness

- Sleepiness
- Slurred speech
- Blurred vision
- Convulsion.

Measures to prevent hypoglycemia in shelters

- Elderly people should avoid exercise or working when hungry.
- Eat meals regularly.
- Eat carbohydrates (e.g. rice, bread, noodles, or potatoes).
- If people cannot eat a meal, they should reduce or skip their hypoglycemic medication.
- Set a higher goal of glucose control (150–200 mg/dL) than usual.

Tips to treat hypoglycemia in shelters

- NMCP, PHN, or CSW should ask those with the above symptoms to take a glucose tablet.

8. *Bronchial asthma*

Signs and symptoms of exacerbation of bronchial asthma

If elderly people have any of the following symptoms, bronchial asthma might be worsening. Please contact medical staff if the following symptoms are detected:

- Paroxysmal wheezing or coughing, or reoccurrence of these symptoms
- Breathlessness during the night
- Breathlessness when moving, speaking, or lying down
- Cyanosis or edema
- Drowsiness.

Measures to prevent exacerbation of bronchial asthma in shelters

- Let NMCP, PHN, CSW, or medical staff know that if an elderly person is taking medication.
- Continue taking medicine.
- Wash your hands and gargle regularly, wear a mask if available, and be careful about infectious diseases such as colds.
- Keep warm.

9. *Chronic obstructive pulmonary disease (COPD)*

Signs and symptoms of exacerbation of COPD

If an elderly person has any of the following symptoms, COPD might be worsening. Please contact medical staff if the following symptoms are detected:

- Increased respiratory rate and shortness of breath
- Worsening of dyspnea on exertion or at rest
- Increased frequency or severity of cough and excessive sputum production
- Mucopurulent sputum (change in sputum character)
- Cyanosis or edema
- Drowsiness.

Measures to prevent exacerbation of COPD in shelters

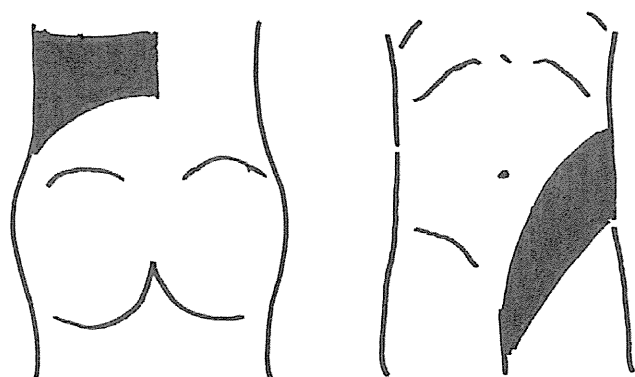


Figure 6 Areas where pain occurs due to urinary tract diseases.

- Let NMCP, PHN, CSW, or medical staff know if an elderly person is taking medication.
- Continue taking medication and inhaling bronchodilators.
- Avoid exposure to smoke and dust.
- Try to wash your hands and gargle regularly.
- Keep warm and do not stay in the cold.

10. Chronic kidney disease (CKD)

Signs and symptoms of CKD

If elderly evacuees have any of the following symptoms, CKD might be worsening. Please contact medical staff if the following symptoms are detected:

- Inactivity, fatigue, or weakness
- Edema
- Appetite loss
- Nausea and/or vomiting
- Pruritus.

Measures to prevent CKD in shelters

- Let NMCP, PHN, CSW, or medical staff know if an elderly person is taking medication.
- Continue taking medicine.
- Have regular blood pressure checks.
- Restrict salt intake.
- Drink enough water to prevent dehydration.
- Keep warm.
- Be careful about infectious diseases such as colds.

11. Urinary diseases

Signs and symptoms of urinary diseases

If an elderly person experiences some of the more severe symptoms of urinary diseases listed below, call medical staff immediately.

- Pain on urination
- Lower abdominal pain (Fig. 6)
- Back pain, lumbago (Fig. 6)
- No urination for half a day or longer

- Distention of lower abdomen
- Bloody urine
- Cloudy smelly urine
- Frequent urination
- Incontinence
- High fever (in cases of pyelonephritis, 38°C or higher)
- Limiting water intake in order to avoid frequent urination or incontinence.

Measures to prevent urinary diseases in shelters

- Replenish fluids with at least one liter of water per day in persons without particular illness such as heart failure or kidney failure.
- Do not avoid going to the toilet.

12. Post-traumatic stress disorder (PTSD)

Signs and symptoms of PTSD

Please contact medical staff if an elderly person has any of the following symptoms. Please contact medical staff if the following signs are detected:

- Sudden change in personality
- Absent-mindedness and the inability to respond quickly
- Restlessness
- Frequent hyperventilation
- Frequent palpitations
- Panic attacks.

Measures to prevent PTSD in shelters

- If elderly people feel distressed or pain, they should confide in someone (a medical staff member, NMCP, PHN, or CSW).
- It may be necessary for the elderly to take medication if they cannot sleep or feel distressed and there is no alternative.

13. Depression

Signs and symptoms of depression

It is not unusual for an elderly person to experience grief after suffering from severe stress. Please contact a medical staff member if the following symptoms of depression are detected:

- Cannot help thinking of bad things
- Not knowing what to do despite actually having many things to do
- Feeling too sluggish to move, although the results of a medical checkup and blood tests are normal
- Unable to sleep at night
- Always thinking of dying.

Measures to prevent depression in shelters

- It is important to maintain a routine, including waking up and going to sleep at the same time daily.
- If elderly people feel distressed or pain, they should confide in someone (a medical staff member, NMCP, PHN, or CSW).

- It may be necessary for the elderly to take medication if they cannot sleep or feel distressed and there is no alternative.
- If an elderly person has been attending a clinic for the treatment of depression, please tell a medical staff member. It is important that the person continues to receive treatment.

14. Behavioral and psychological symptoms of dementia (BPSD)

Signs and symptoms of BPSD

Please contact a medical staff member if the following symptoms of dementia are detected:

- Restlessness and speaking in a disjointed manner
- Paranoid or having delusions (e.g. a false idea of being robbed)
- Becoming angry or starting to cry suddenly.

Measures to prevent BPSD in shelters

- Create an environment in which dementia patients can spend time with familiar people.
- Prepare a quiet environment so that dementia patients can get adequate sleep at night.
- Preparations should be made so that a dementia patient can be transferred to a professional medical institute when psychological symptoms or behavioral abnormality is observed.

15. Delirium

Signs and symptoms of delirium

Please contact medical staff if any of the following physical symptoms are detected in elderly persons who had previously been well and not experienced any decrease in cognitive function:

- Speaking or behaving in an erratic manner
- Absent-mindedness or being distracted
- Emotional instability (e.g. becoming angry, starting to cry, or getting excited suddenly).

Measures to prevent delirium in shelters

- Particular attention should be paid to dehydration, infections, and other underlying physical disorders, which can cause delirium in the elderly. Please be aware that elderly people with physical disorders are potential delirium patients.
- Keeping the elderly company and talking to them to provide stimulation are effective for preventing lethargy during the daytime. At night, create a quiet environment to help them achieve a regular sleeping pattern.

16. Dental diseases

Signs and symptoms of dental diseases

If an elderly person is showing some of the more severe symptoms of dental disease listed below, call medical staff immediately.

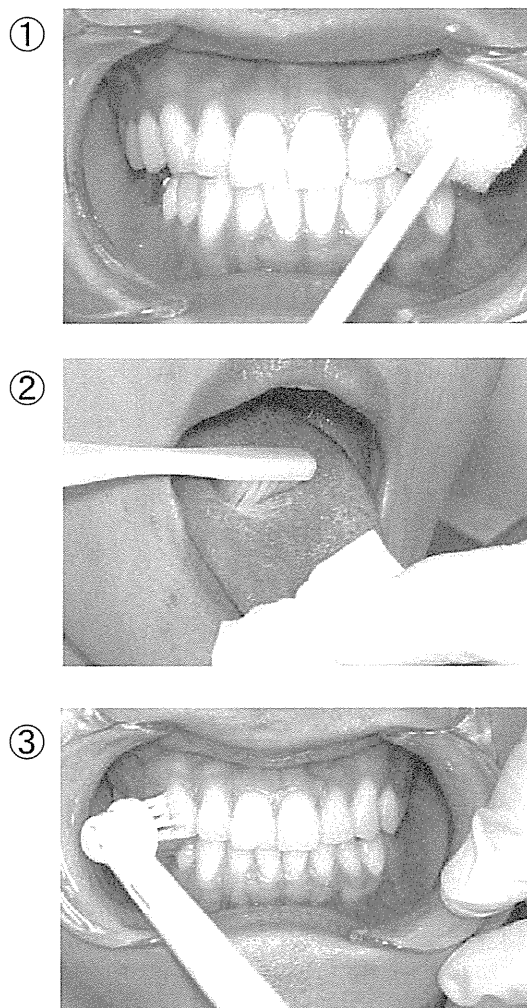


Figure 7 Systematic oral care program.

- Pain from dental caries
- Swelling and bleeding of the gingival
- Severe halitosis
- Fur on the tongue.

Measures to prevent dental diseases in shelters

- Keep cleaning the mouth.
- Brush the teeth every day.
- Those who are unable to do the above independently need to receive a systematic oral care program (Fig. 7)¹⁰
 - 1 Remove oral-mucosal and gingival saburra by using an oral care sponge for one minute.
 - 2 Remove fur from the tongue with a tongue brush for half a minute.
 - 3 Remove bacterial flora from the tooth surface with an electric toothbrush for 2.5 minutes, if an electric power supply is available.
 - 4 Rinse the mouth for 1 minute.

17. Functional inactivity

Signs and symptoms of functional inactivity

Elderly people often may not complain of their subjective symptoms accurately, or they may not be aware of a decline in their health. Thus, it is important for NMCP, PHN, or CSW to be aware of elderly persons' health conditions as well as the whereabouts of subjects who require support and/or nursing care.

If an elderly person shows some of the more severe symptoms of functional inactivity listed below, call medical staff and/or shelter staff.

- Being isolated, with no attempt to communicate
- Narrow range of activities and staying indoors
- Lying down all day long

Measures to prevent functional inactivity in shelters

- Encourage subjects to greet each other and make small talk in the shelter.
- Exercise regularly.
- Bend and stretch your arms and legs often, even in the narrow living space in the shelter.
- NMCP, PHN, or CSW should evaluate the reserve capability of elderly subjects with functional inactivity promptly.

18. Decubitus

Signs and symptoms of decubitus

NMCP, PHN, or CSW should actively survey the onset of decubitus ulcer, particularly on the hip, the backbone, the heel, and the back of the head, in bedridden subjects. Since this illness needs long-term management, contact medical staff and arrange transport to the hospital.

Measures to prevent decubitus in shelters

- Change bedridden subjects' position every 2 hours a day.
- Keep the skin clean.

19. Heat stroke

Signs and symptoms of heat stroke

In summer, pay special attention to heat stroke in elderly people in shelters. The main features are hot skin (body temperature $\geq 40^{\circ}\text{C}$) without sweat and drowsiness. Call medical staff immediately as this condition will cause fatality.

Measures to prevent heat stroke in shelters

- Keep cooling the neck or under the arms.
- Do not restrict water intake.

II. Signs of acute diseases in elderly

If any of the following symptoms is encountered in the elderly, they may be severely ill due to acute disease.

These signs of acute diseases are sensitive enough to rapidly detect a severe state in elderly evacuees. NMCP, PHN, or CSW should consult attending medical staff immediately. Asterisks denote signs indicating the need for emergency transport.

1. Disturbance of Consciousness (Japan Coma Scale [JCS] Scoring)

- Rousable by being spoken to but reverts to previous state if stimulus stops (JCS II-10)
- Rousable with loud voice but reverts to previous state if stimulus stops (JCS II-20)
- Rousable only by repeated mechanical stimuli (JCS II-30)
- * Unrousable using any forceful stimuli but responds to avoid the stimuli (JCS III-100 to III-300).

2. Shock

- * Anemia (e.g. pallor of lips and/or nails)
- * Bleeding due to external injuries
- * Disturbance of consciousness (JCS III-100 to III-300)
- Abnormal skin turgor, a physical sign of dehydration
- Dry tongue
- * A decline in BP: systolic BP < 90 mmHg
- * An increase or decrease in pulse rate (i.e. resting pulse rate of more than 120 beats/minute or less than 50 beats /minute).

3. Dyspnea

- Shallow and rapid respiration, puffing (shallow breathing)
- Shoulder breathing (accessory muscle use)
- Flaring of wings of the nose and dilated nostrils (nasal alar breathing)
- Violet color to lips and nails (cyanosis)
- Wheezing or whistling while breathing (wheeze/stridor)
- Sleeping with the upper body raised in order to breathe (orthopnea)
- Weak breathing, suspended on occasion (apnea)
- Pursing the lips when exhaling (pursed lips breathing)
- * Collapse of supraclavicular or intercostal spaces when inhaling (inspiratory retraction)
- * Distension of the abdomen/shrinking of the chest when inhaling, and shrinking of the abdomen/ distension of the chest when exhaling (seesaw breathing)
- * Obvious asymmetric movement of the chest during respiration
- * Respiratory rate less than 10/minute or more than 30/minute.

4. Acute abdomen

- * Uncontrollable abdominal pain

- * Hematemesis, vomiting blood
- * Tarry (black) stool, visibly bloody stools not due to hemorrhoids
- * Frequent vomiting
- * Abdominal swelling, abdominal distension
- * Severe anemia (pallor of face or lips).

5. *Neurological abnormalities.*

- * Motor disturbance including hemiparesis/hemiplegia/numbness, muscle weakness of the face (central facial palsy), eyelid drooping (ptosis)
- * Aphasia (difficulty with verbal expression, auditory comprehension)
- * Sensory or vibratory disturbance (unilateral)
- * Visual field defect/hemianopia, double vision/polyopia
- * Loss of balance when sitting, standing, or walking; loss of coordination
- * Pupils not isocoric
- * Convulsions or cramps.

6. *Chest pain*

- * Chest pain, oppression, burning, or choking sensation in anterior chest
- * Increasing frequency and worsening angina attacks compared with 2 weeks earlier
- * Chest symptoms even at rest or at night
- * Continuation (without improvement) of these symptoms in spite of aspirin or nitroglycerine use
- * Duration of chest symptoms: more than 20 minutes.

7. *Hypertensive emergency*

- * Hypertension (systolic BP \geq 200 mmHg).

8. *High fever*

- Shivering (shaking chills) coinciding with high fever and potential severe infectious diseases (i.e. bacteremia)
- Burning forehead and poor response to being called.

9. *Hematuria*

- Red and/or tea-colored urine.

III. Symptoms of anxiety in elderly in shelters

If an elderly person is showing some of the symptoms listed below, immediately ask medical staff to assess the presence of serious diseases.

1. *Dysphagia, difficulty in swallowing*

- Coughing or breathing in food while swallowing

- Aspiration (i.e. escape of food or liquid into the lungs) or labored breathing while swallowing
- Recurrent pneumonia, respiratory infections, or choking experiences
- Wet vocal quality (“gurgly” voice) after swallowing
- Irritability during feeding or failure to thrive
- Prolonged feeding times (more than one hour)
- Unexplained weight loss.

2. *Diarrhea*

- Subject has diarrhea and a fever.
- Similar symptoms (diarrhea) are observed in surrounding evacuees.
- If diarrhea persists for two days or more, ask medical staff to assess, in order to avoid dehydration.

3. *Constipation*

- Change in bowel habit
- Constipation with abdominal pain
- Constipation for 2 or more days.

Discussion

On 11 March 2011, an earthquake with a 9.0 magnitude occurred off of Japan’s Pacific coast and hit northeast Japan. The earthquake was followed by huge tsunamis, which destroyed many coastal cities.^{11,12} A total of 14 841 people died in these events, and 10 063 persons are still missing as of 6 May 2011.¹³ In addition, 109 086 homes were completely or partially destroyed, and 3970 roads were damaged.¹³ There are still 119 967 displaced people (down from approximately 470 000 on March 14) living in shelters because of disrupted community utility services and/or health risks related to the nuclear power plant accidents in Fukushima.¹³⁻¹⁵ Specifically, 37 482, 35 923, and 25 501 persons took refuge into the 357, 403, and 157 evacuation centers located in Iwate, Miyagi, and Fukushima prefectures, respectively.¹³

There were several reports concerning medical needs following the 2011 earthquake off the Pacific coast of Tohoku. For instance, reports have highlighted the importance of managing the exacerbation of chronic illnesses (e.g. hypertension, cardiac disease, DM, and chronic pulmonary disease) as well as dehydration in elderly evacuees, especially as it was difficult to source enough medication for their chronic illnesses.^{16,17} Health workers should pay attention to the possible spread of acute diseases such as gastroenteritis, diarrhea, and other illnesses associated with dirty water.¹⁶ In addition to physical health problems, it is important to rapidly detect long-term mental problems in the elderly (e.g. PTSD, depression, BPSD, and delirium) triggered by the disaster.^{16,17} Medical specialists have indicated

that thousands of victims will be in need of long-term counseling to cope with the loss of their relatives, friends, and homes.¹⁶

There were some cases that previous guidelines failed to cover because of the unexpected phenomena following the Tohoku earthquake. Therefore, it is essential that we are mindful of the difficulties in establishing general guidelines that can cover a wide (and unexpected) range of disasters. Feedback regarding the booklets will need to be collected from NMCP, PHN, or CSW to assess the guidelines' usability. We further need to investigate the morbidity and mortality from disaster-related illnesses among the elderly in order to clarify efficacy of these guidelines.

Acknowledgements

The authors thank Drs Yukihiro Watoh, Takeshi Nakahashi, Shigeru Kudoh, Masashi Okuro, Kenta Hara, Hisafumi Yasuda, and Yasuyoshi Ouchi (president, Japan Geriatrics Society), Mr Hiroto Minamide, Ms Takako Ichihara, and Ms Kaori Nakamura for their helpful assistance. The authors also thank Dr Yasunori Sumi (Department of Dental Surgery, National Center for Geriatrics and Gerontology, Obu, Japan) for providing Figure 7.

Conflict of interest

None of the authors has any financial disclosure to report. This work was supported by research funding for comprehensive research on aging and health (H22-003) from Ministry of Health, Labour, and Welfare of Japan.

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ORIGINAL ARTICLE: EPIDEMIOLOGY,
CLINICAL PRACTICE AND HEALTH

Controlled study on the cognitive and psychological effect of coloring and drawing in mild Alzheimer's disease patients

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Aim: Art therapy has been reported to have effects on mental symptoms in patients with dementia, and its usefulness is expected. We performed a controlled trial to evaluate the usefulness of art therapy compared with calculation training in patients with mild Alzheimer's disease.

Methods: Thirty-nine patients with Alzheimer's disease showing slightly decreased cognitive function allowing treatment on an outpatient basis were randomly allocated to art therapy and control (learning therapy using calculation) groups, and intervention was performed once weekly for 12 weeks.

Results: Comparison of the results of evaluation between before and after therapy in each group showed significant improvement in the Apathy Scale in the art therapy group ($P = 0.014$) and in the Mini-Mental State Examination score ($P = 0.015$) in the calculation drill group, but no significant differences in the other items between the two groups. Patients showing a 10% or greater improvement were compared between the two groups. Significant improvement in the quality of life (QOL) was observed in the art therapy compared with the calculation training group ($P = 0.038$, odds ratio, 5.54). ANOVA concerning improvement after each method revealed no significant difference in any item.

Conclusion: These results suggested improvement in at least the vitality and the QOL of patients with mild Alzheimer's disease after art therapy compared with calculation, but no marked comprehensive differences between the two methods. In non-pharmacological therapy for dementia, studies attaching importance to the motivation and satisfaction of patients and their family members rather than the superiority of methods may be necessary in the future. *Geriatr Gerontol Int 2011; 11: 431–437.*

Keywords: Alzheimer's, art, coloring, non-pharmacological.

Introduction

Alzheimer's disease causes declines in not only cognitive function but also mood, vitality and activities of

Accepted for publication 1 February 2011.

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daily living (ADL). Concerning drug therapy, new drugs other than donepezil are undergoing trials, but, despite expectations, it is difficult to control the disease with these drugs alone. The well-balanced administration of drug and non-pharmacological therapies is a matter of basic importance in the therapeutic strategy for Alzheimer's disease. Particularly, non-pharmacological therapy is expected to be effective for improving the ADL and quality of life (QOL).¹ Although various methods have been proposed as non-pharmacological

therapy for dementia, evidence of their effectiveness remains insufficient. Art therapy has been reported to be effective for alleviating psychiatric symptoms of dementia² and is expected to be useful, but there have been few comparative studies using a control group.³ In this study, we administered art therapy to patients with Alzheimer's disease, and evaluated its effectiveness for the treatment of dementia in a controlled study using calculation training.

Methods

Registration criteria

Of the men and women aged 65–85 years who consulted the outpatient clinic of the Department of Psychiatry or Memory Clinic, National Center for Geriatrics and Gerontology, who were accompanied by their families and could visit the hospital once a week, only those showing mild impairment of cognitive function with a Mini-Mental State Examination (MMSE) score of 20 or higher, which is a National Institute of Neurological and Communicative Diseases and Stroke/Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA) diagnostic criterion for Alzheimer's disease, and exhibiting characteristic findings such as diffuse brain atrophy on magnetic resonance imaging (MRI) and a decrease in the blood flow in the parietal lobe and posterior cingulate gyrus on single photon emission computed tomography (SPECT) were registered. The subjects were also limited to those showing recent memory impairment and disorientation. For patients administered donepezil hydrochloride, those in whom 6 months or longer had passed were registered. Among those with MMSE of 25 or higher, only those exhibiting recent memory impairment (more specifically, score of recall as a sub-item of the MMSE = 0) and findings characteristic of Alzheimer's disease on SPECT were registered.

Exclusion criteria

Patients who did not fulfill the diagnostic criteria of Alzheimer's disease, namely, those with MMSE of 25 or higher except those who fulfilled the above registration criteria and those with MMSE of 19 or lower, were excluded. Also, those in whom speech symptoms and the impairment of execution functions were primary symptoms and those who showed no findings characteristic of Alzheimer's disease on cerebral scintigraphy were not registered. The above judgments of whether the patients should be registered or excluded were made by a geriatric psychiatrist not involved in the intervention.

Grouping

All patients gave consent before registration. Consent for the study was obtained from 47 patients who fulfilled the diagnostic criteria of Alzheimer's disease. Forty-three registrants, excluding four who did not fulfill the criteria on the evaluation immediately before the study, were stratified according to age (≤ 75 and ≥ 76 years), sex and MMSE (≤ 24 and ≥ 25), and randomized to two groups using the minimization method. After the beginning of intervention, two patients were lost from each group because they contracted physical diseases, and so evaluation at the end of intervention was possible in 39 (Fig. 1). Table 1 shows the baseline data in each group.

Study period

Group therapy with approximately five participants in each session was performed in both the art therapy and calculation drill groups. Patients of both groups visited the hospital once a week and underwent a 45-min training session. They were also instructed to carry out tasks within their capability for approximately 15 min daily. Comparisons were made between before and after 12 sessions (1 course).

Intervention methods

In the art therapy group, art therapy was performed by combining several techniques, but the primary task was to color abstract patterns with pastel crayons or water-based paint (Fig. 2). These patterns were originally devised by T. Mase, a co-author, and the shapes of birds and cats among others, which are unclear before coloring, are designed to appear after coloring. In addition, the patients were encouraged to color line drawings of familiar objects such as flowers, children and fish or draw pictures based on their memories or favorite seasons. Art therapy was performed by T. Mase, C. Hattori, C. Hokao and K. Mizushima. Mase has not experienced medical work but has a long career as an industrial designer and artist. C. Hattori, C. Hokao and K. Mizushima have rich experience as speech therapists in non-drug therapy for dementia and rehabilitation for patients with higher brain dysfunction.

In the calculation group, the task involved simple calculations, which were additions and multiplications of 1- or 2-figure numbers. No target was set, and the patients performed as many calculation tasks as possible during the session at their own pace. C. Hattori, C. Hokao and Mizushima were involved in the calculation drill.

Patients were accompanied by their family members in both art therapy and calculation training to reduce patients' tension and calm them.

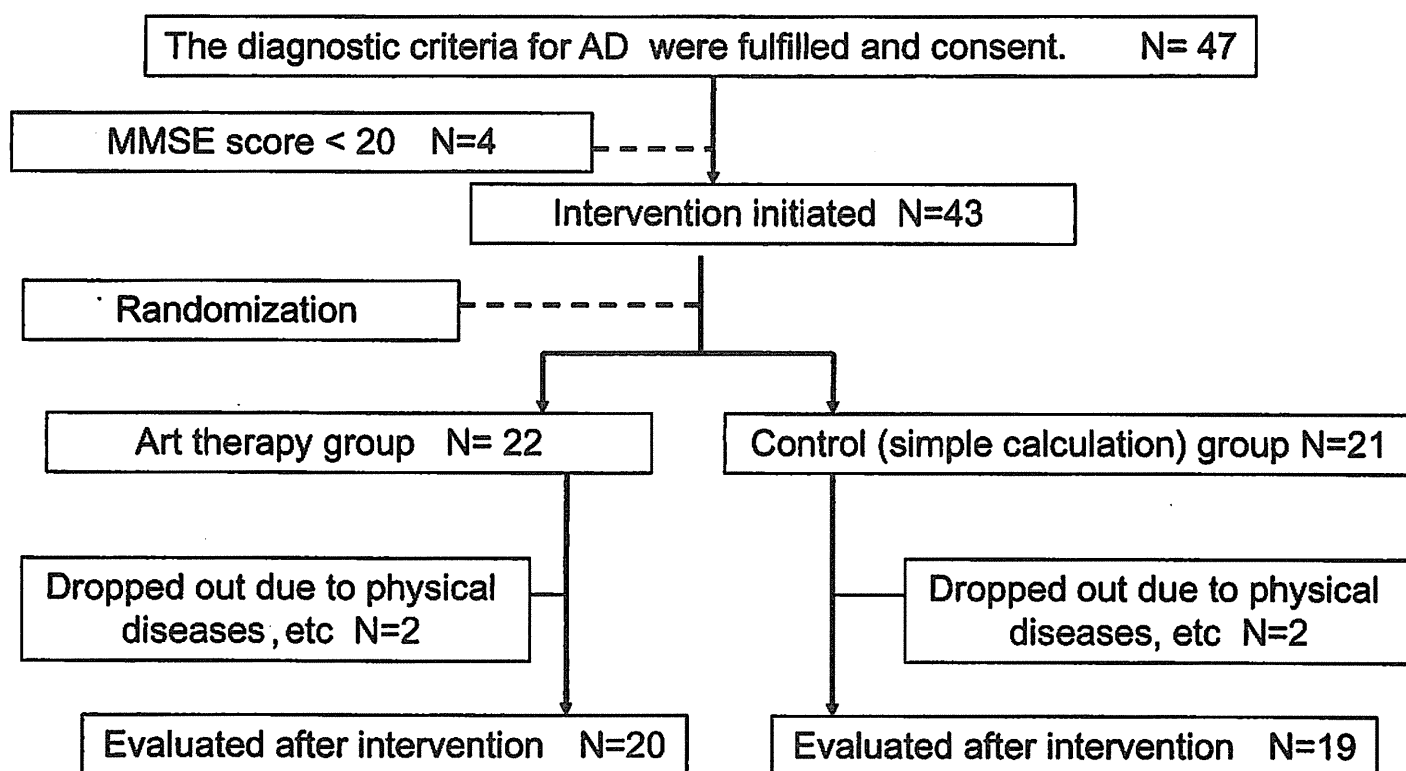


Figure 1 Flow chart of patient registration. There were patients who did not fulfill the criterion concerning the Mini-Mental State Examination (MMSE) score on re-examination after registration. AD, Alzheimer's disease.

Table 1 Baseline data

<i>n</i>	Colorings and drawings 20	Control (calculation) 19
Age	75.3 ± 5.3	73.3 ± 6.3
Sex (M/F)	9/11	9/10
MMSE	24.6 ± 3.4	22.3 ± 2.7
HDS-R	23.2 ± 4.7	24.3 ± 5.0
logical memory	7.2 ± 5.5	6.1 ± 4.4
Barthel Index	97.4 ± 6.3	98.1 ± 5.3

HDS-R, Revised Hasegawa's Dementia Scale; MMSE, Mini-Mental State Examination.

Evaluation methods

In this study, the patients' mental functions such as mood and vitality, behavioral impairment, QOL and ADL, and their caregivers' sense of burden were evaluated in addition to the patients' cognitive functions such as memory and orientation. Cognitive function and memory were evaluated by MMSE and logical memory, a subscale of the Wechsler Memory Scale revised (WMS-R). Mood and vitality were evaluated by the Geriatric Depression Scale (GDS)⁴ and Apathy Scale (Japanese version).⁵ The QOL was evaluated using Short Form (SF-8). With SF-8, the QOL can be evaluated from physical and mental viewpoints using the

Physical Component Summary (PCS-8) and Mental Component Summary (MCS-8).⁶ The patients' behavioral abnormalities were evaluated using the Dementia Behavior Disturbance Scale (DBD).⁷ Whether the sense of burden of the patients' families changed between before and after the intervention was evaluated by examining the Barthel Index and performing the Japanese version of the Zarit Caregiver Burden Interview⁸ before and after the intervention.

Statistical analyses

Comparisons of the results of evaluations before and after the intervention were made employing the signed

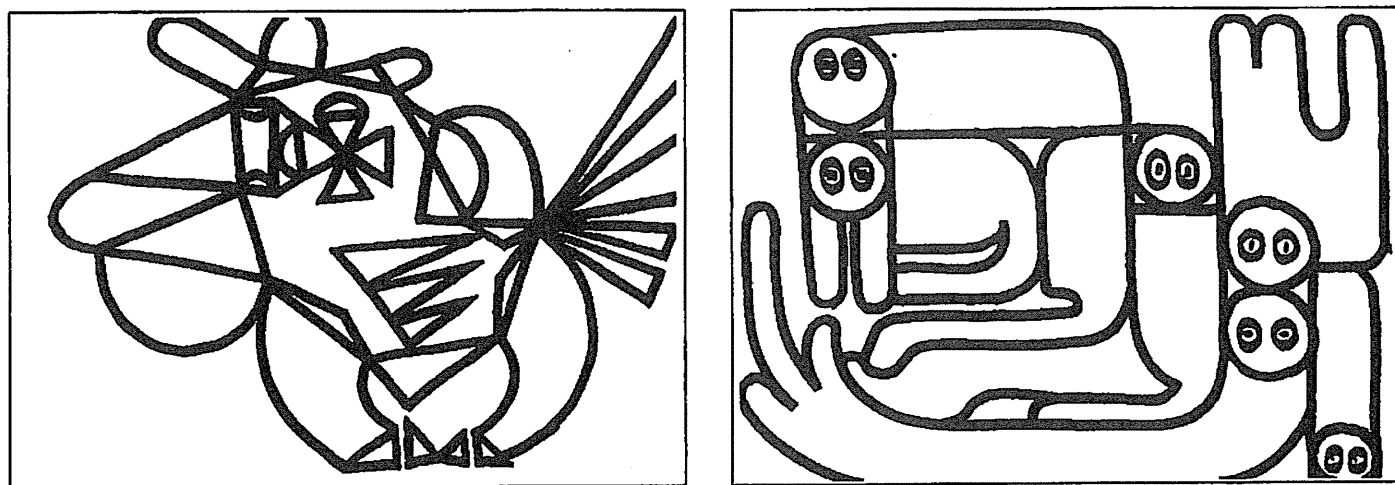


Figure 2 Line drawings used in this study. They were originally devised by T. Mase, a co-author. While the designs are unclear as line drawings, the shapes of birds and cats among others become apparent through coloring.

rank sum test (Wilcoxon). Because there were differences in baseline data between the art therapy and calculation drill groups, a simple comparison of the test scores did not yield clear differences on direct comparisons. Therefore, the percentage of patients who showed a 10% or greater improvement relative to the baseline score before the intervention was compared using the χ^2 -test.⁹ To compare therapeutic effects between the two groups, two-way ANOVA was performed. $P < 0.05$ was considered significant in all tests.

Results

Comparison at the baseline showed no significant difference between the two groups. Comparison of the results of evaluation between before and after each therapy revealed significant improvement in the Apathy Scale in the art therapy group ($P = 0.0014$) and in the MMSE score in the control group ($P = 0.0015$) but no significant difference in the other items (Table 2). To compare the effects between art therapy and calculation training, the percentage of responders showing a 10% or greater improvement was compared between the two groups by the χ^2 -test. Significant improvement was observed in MCS-8 as a subscale of the SF-8 in the art therapy compared with the calculation training group ($P = 0.038$; odds ratio, 5.54) (Fig. 3). Concerning cognitive function, changes in the MMSE score were analyzed by two-way ANOVA. The value before therapy was corrected, regarding the mean value in both groups as 24.6. No interaction with other items was observed. The MMSE score tended to improve in the calculation training group, but did not significantly differ between the two groups (Fig. 4). ANOVA for vitality, mood and the QOL also showed no significant difference. These results suggested improvement in vitality in the art

therapy group and in cognitive function in the calculation training group. Direct comparison revealed improvement in the mental QOL in the art therapy group but no difference in the other items, suggesting that the effects were similar between art therapy and calculation.

Discussion

In this study, the effects of art therapy on Alzheimer's disease concerning multiple factors including the patients' cognitive function, vitality, behavior and burden on caregivers were evaluated. A wide variety of non-drug therapies for dementia, including cognitive-behavioral therapy,⁹ cognitive rehabilitation,^{10,11} reality orientation training,¹² reminiscence therapy,¹³ music therapy,¹⁴ aromatherapy,¹⁵ animal therapy¹⁶ and exercise therapy,¹⁷ have been proposed, but the lack of precision and consistency in the diagnosis and evaluation of the patient's condition remains a problem.³

With this problem in mind, we emphasized the precision of the clinical diagnosis and conducted this study in patients carefully diagnosed on the basis of not only clinical symptoms but also MRI and SPECT findings. No therapeutic intervention in the control group is ethically unacceptable as a control group. In this study, therefore, we treated the control group by employing a method reported to have been effective. A calculation drill was adopted as a control task on the basis of a report that it was effective for the treatment of dementia.¹⁸

Also in this study, an intimate atmosphere was considered important for patients to receive art therapy or perform calculation, and staff members took care not to produce differences in conditions between the two groups. In both groups, patients and accompanying

Table 2 Evaluation results before and after the intervention in the art therapy and control groups

	Before Mean	SD	After Mean	SD	P-value
Colorings and drawings					
MMSE	24.6	3.4	24.4	3.0	0.220
WMS-log	7.2	5.5	7.7	5.7	0.292
GDS	4.3	2.8	3.8	3.0	0.294
Apathy Scale	15.9	7.1	12.7	6.1	0.014
PCS-8	50.8	7.1	50.5	4.0	0.421
MCS-8	51.3	6.8	53.4	3.3	0.085
Barthel Index	97.4	6.3	97.1	5.4	0.375
DBD	15.4	13.9	16.8	12.9	0.183
Zarit	17.7	10.9	16.9	9.1	0.337
Calculation (control)					
MMSE	22.3	2.7	24.4	2.7	0.015
WMS-log	6.1	4.8	6.0	3.0	0.172
GDS	2.3	1.8	3.8	1.4	0.466
Apathy Scale	13.0	4.7	11.9	6.7	0.090
PCS-8	48.0	11.4	47.3	6.7	0.396
MCS-8	54.8	4.3	52.9	6.7	0.290
Barthel Index	98.1	5.3	96.9	8.8	0.129
DBD	13.3	10.3	14.5	12.7	0.267
Zarit	19.3	6.7	16.5	10.5	0.391

Improvement was observed in the Apathy Scale in the art therapy group and in the MMSE score in the calculation drill group. DBD, Dementia Behavior Disturbance Scale; GDS, Geriatric Depression Scale; MCS, Mental Component Summary; MMSE, Mini-Mental State Examination; PCS, Physical Component Summary; SD, standard deviation; WMS, Wechsler Memory Scale.

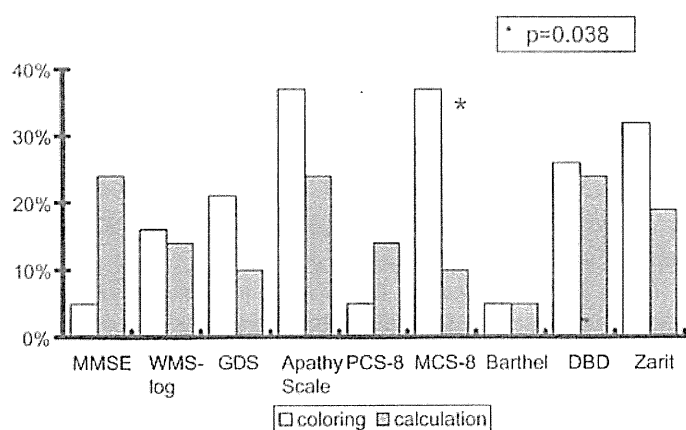


Figure 3 Percentages of patients who showed a 10% or greater improvement after intervention. DBD, Dementia Behavior Disturbance Scale; GDS, Geriatric Depression Scale; MCS, Mental Component Summary; MMSE, Mini-Mental State Examination; PCS, Physical Component Summary; WMS, Wechsler Memory Scale.

family members appeared to enjoy the tasks. Although significant improvement was observed in PCS of the SF-32 in the art therapy group, many patients and their families in both groups reported satisfaction after each method and desired its continuation.

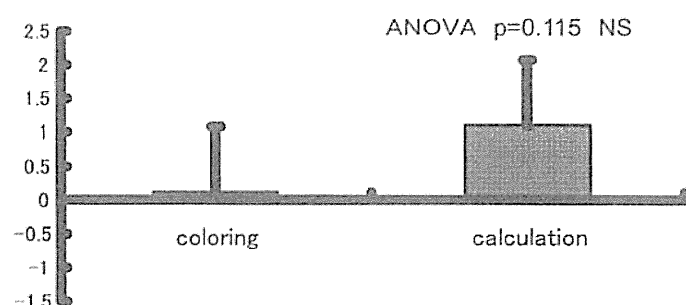


Figure 4 Effects on cognitive function (Mini-Mental State Examination) in both groups by ANOVA. The value for therapy was corrected, regarding the mean value in both groups as 24.6.

From the results of this study, no clear evidence that art therapy improves the cognitive function of patients with mild Alzheimer's disease was obtained. Instead, improvements in the vitality and QOL were observed. In the calculation drill group, an improvement in the cognitive function was noted, but improvements in other evaluation items were unclear. Art therapy has been reported to improve attention, interest, emotion of joy, self-respect² and QOL¹⁹ in demented patients. It is

considered to impart sensory stimuli of shapes and colors and joy on completing drawings, probably leading to enhanced vitality. The results of this study also support these reports. However, no significant improvement was noted in the mood, behavior or caregivers' burden, probably because of the variation in the baseline data of other items and the small number of registrants due to the emphasis on the cognitive function in the subject selection. Also, 12 weeks may have been too short for non-drug intervention to show clear effects. Reassessment performed 12 weeks after the completion of intervention in a few patients showed aggravation of the cognitive function and vitality in both groups, which suggested that the continuation of intervention is desirable (data not shown). However, the results of this study were obtained by the comparison of a relatively uniform group of carefully diagnosed patients with a control group and are considered to be more reliable. This study confirmed that art therapy improves the vitality and QOL of patients with mild Alzheimer's disease.

As an improvement in the MMSE was observed in the calculation drill group, the results of this study indicate no absolute superiority on comparing art therapy and calculation drills as non-drug therapies. To improve the daily life functions of demented patients, it is considered most important to devise a system that permits the selection of the most appropriate approach in consideration of the condition and preferences of each patient rather than comparing various techniques of non-drug therapy to determine their relative effectiveness.

This study has many limitations. It is possible that the small number of samples affected the statistical results. As mentioned above, the establishment of a control group is an extremely difficult problem in this type of study. Using a control group without any intervention, the distinction between the effects of an intervention method and those of intervention itself is difficult. We produced a study design using calculation training, which has been reported to have certain effects, for comparison, but its limitation as a control method is clear. This remains a problem to be overcome in the future. In addition, in the evaluation of functions of daily living, ceiling effects are observed in patients with mild disease such as the subjects of this study, and improvement is difficult to identify. Methods to evaluate higher functions such as instrumental ADL should be used.

Finally, non-pharmacological therapy as a whole is discussed. As a result of this study, because improvement in the MMSE score was observed in the calculation group, it cannot be concluded that calculation or art therapy has an absolute value. Our results show that the two groups may have little difference in effects for brain function. Non-specific stimulation by non-pharmacological interventions in a broad sense includ-

ing day care may be useful. In the future, empirical studies on non-pharmacological therapy for dementia, attaching importance to elements such as patients' vitality, taste, QOL and pleasure, are necessary although they are difficult. For improvement of the function of daily living, it is not necessary to determine which is superior by comparing art therapy and other various methods, but the most important task is to establish a system that allows the selection of appropriate methods such as comprehensive group cognitive therapy²⁰ in individual patients with a consideration of their disease condition and preference.

Acknowledgments

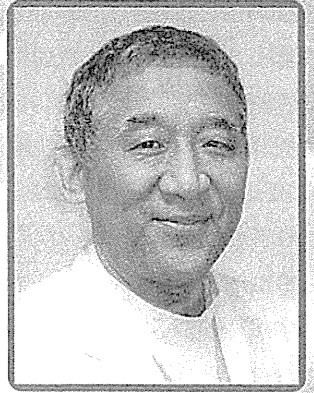
This study was funded by Comprehensive Research on Aging and Health (as part of Health and Labor Sciences Research Grants 2006) to "On the Study the Efficacy of Non-Drug Therapy (H18-Choju-ippan-024)"

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地域ケアで患者を支える



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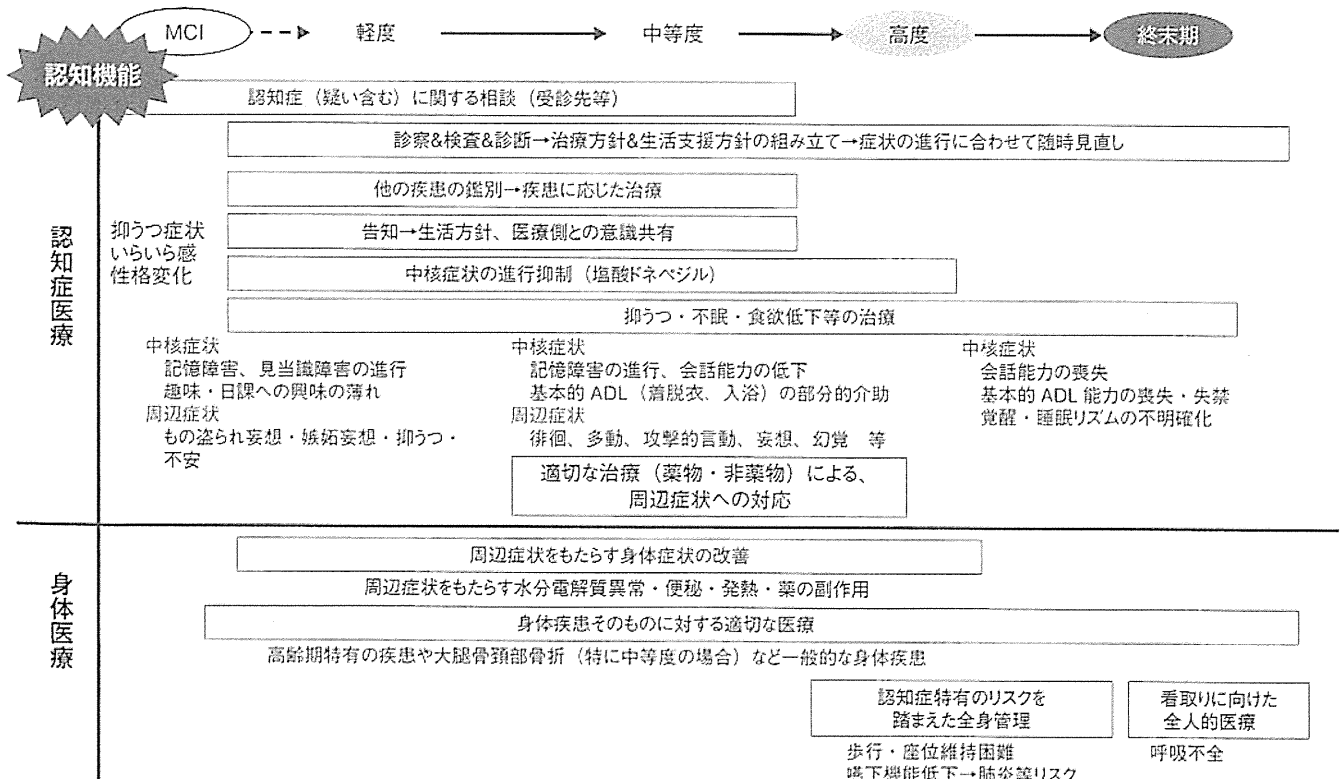
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はじめに

認知症の地域連携、ケアを考えるうえで、まず認知症の特性について押さえておく必要がある。認知症は単一疾患ではなく、さまざまな原因疾患を背景にして生ずる脳機能損傷から出現する症候群であって、多彩な症状の発現がみられる。たとえ基礎疾患が同じであっても現れ

る病像は個人差が大きく、併存する身体疾患、取り巻く環境などの影響を強く受ける。さらに、多くの認知症例は長期の経過をとるが、認知機能障害が軽度の時期、重度の時期では状態像が大きく異なり、必要とされる介護の質が変化するという特性もある。

アルツハイマー型認知症を例にとると、初期の段階では、診断を適切に下すことともに、診断に基づいた生活



(東京都福祉保健局編資料を一部改変)

図1 認知症の経過と必要な医療 (アルツハイマー型認知症等変性疾患の場合)

援助を本人の能力に応じて支援する体制づくり、疾患の知識、介護サービスの利用法などを家族へ伝えることが重要であり、抗アルツハイマー病薬の使用も積極的に勧められるであろう。認知機能低下が進むと一般的に徘徊などの行動障害や着脱衣、入浴などの生活機能障害が顕著になり、介護困難の度合いが増してくるためデイサービス、ショートステイ、ホームヘルプなどの介護サービスの積極的利用が求められる。認知症に伴う精神症状・行動異常（BPSD）に対して抗精神病薬の使用なども必要となろう。末期になると日常生活機能低下が著しくなり、栄養や水分補給、感染症予防といった身体管理の重要性が増してくる。身体治療のための入院や施設入所の必要性が増してくるし、在宅の場合は訪問看護、自宅の改造などが求められる（図1）¹¹⁾。

以上をまとめると、認知症には、原因の多様性、症状の多様性（個体差、経時的変化）が考慮される必要があり、認知症患者・家族を取り巻く地域におけるさまざまな職種、施設の連携があって初めて、行き届いた診療、ケア、介護を進めることができる。

認知症医療の課題

上記のような特性を持つ認知症、とくに認知症に伴う

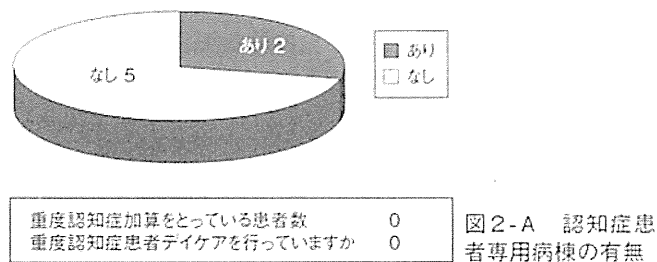


図2-A 認知症患者専用病棟の有無

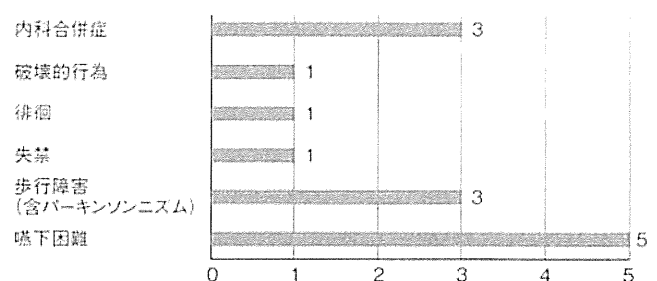


図2-B 治療困難な重度認知症の症状(複数回答)

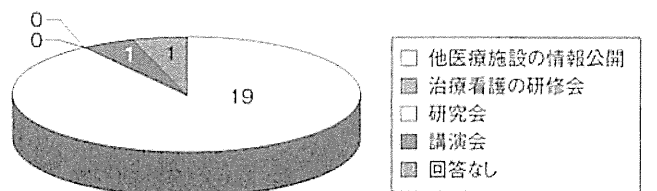


図2-C 診療ネットワークづくりにおいて期待するもの

精神症状・行動異常（BPSD）に対する医療、介護の現状はどうであろうか。

国立長寿医療研究センターが位置する知多半島において精神科医療機関に対して行ったアンケート調査結果の一部を紹介する。対象は知多半島地域及び近隣の単科精神科病院、総合病院精神科、精神科クリニックである。内訳は単科精神科病院7件、クリニック、総合病院14件である。その結果、認知症の専門治療はすべての精神科病院で行われているわけではなく、むしろ少数にとどまっていた（図2-A）。認知症患者の治療において難渋するのは純粋な精神症状というよりもむしろ内科疾患や、嚥下障害、歩行障害といった神経症状であった（図2-B）。認知症診療における地域連携の具体的実践として求められているのは、病院、クリニックともに地域の医療機関の情報公開であった（図2-C）。さらに他の調査結果を総合してみると、認知症診療における表1のような問題点が浮かび上がってきた。

●認知症地域連携において求められるもの（身体疾患治療、BPSD）

このような状況から考えると、認知症診療において地域連携が必要とされる局面は2つであるように思われる。一つは、地域における認知症患者の早期発見とそこから早期治療につないでいくこと。もう一つは、介護負担が大きく、医療介入が必要なBPSD患者及び身体疾患を併発した認知症患者の診療である。

早期発見・早期治療についてはすでに多くの地域でさまざまな取り組みがなされている。国立長寿医療研究センターのある大府市においても、地域の医師（大府市医師団）と連携でクリニックレベルでの早期発見と専門病院であるセンターへの円滑な紹介ができるシステムを構築してきた。一方で、BPSD患者の地域連携上の問題点として、BPSD自体が治療介護困難であること、症状把握の困難さ、合併身体症状の治療困難（手術など入院時の管理）があげられる。また、BPSDの何に焦点をあてた介護診療を行うかで担当すべき医療機関、施設が適切に選択できるかが重要になる。すなわち、症状自体の治

表1 認知症診療の現状(アンケート結果から)

1. 専門医療を提供する医師や医療機関の数が不十分
2. 認知症を専門としない医療関係者の認知症に関する理解が不十分
3. 認知症の行動・心理症状に対する治療が未確立
4. 身体合併症の治療が適切に行われていない

れている。センターには、保健師、主任ケアマネジャー、社会福祉士が置かれ、専門性を生かして相互連携しながら業務にあたる。法律上は市町村事業である地域支援事業を行う機関であるが、外部への委託も可能である。要支援認定を受けた者の介護予防マネジメントを行う介護予防支援事業所としても機能する。

その業務内容は、認知症疾患医療センターとの相談・連絡、認知症患者の権利擁護の専門家等との相談・連絡、他の地域包括支援センターへの専門的な認知症ケア相談、定期的な巡回相談、具体的な援助等となっている。認知症疾患医療センターの「連携担当者」と地域包括支援センターの「認知症連携担当者」が連携し、切れ目のない医療と介護のサービスを提供するとともに、地域ケアに対する専門的な支援を実施することが求められる。

今後の地域連携について

現在、各地で認知症医療・介護のための地域連携組織が立ち上げられている。それらは、地域連携パスの使用、研修会などによる相互交流などにより、患者の転院、紹介などを円滑に行うことをめざしており、直接「顔の見える」連携が模索されている。このことは大変重要なことであり、各地の関係者のみなさんの努力を多としたい。しかし、一方で医療機関や介護施設での受け入れ能力が十分でないことが連携を滞らせる大きな要因にもなっている。たとえば、身体合併症治療が必要な認知症患者が地域の中で発生した場合でも、一般病院では管理面から認知症、なかでもBPSD患者の入院治療受け入れが困難であることが多くなっているのが実情だ。したがって、認知症疾患医療センターのような専門医療機関内の認知症BPSD及び身体合併症診療能力を上げることで、患者

受け入れ能力を向上させることも、間接的に地域連携を促進する重要な要素であると考えられる(表2)。認知症患者の受け入れ能力を改善するためには、院内に認知症入院治療支援体制を構築することが必要である³⁾。

国立長寿医療研究センターでは、入院に関しては精神科病床を持たないため、重度のBPSD例に関しては近隣の協力病院にお願いすることになっているが、身体合併症を有する認知症例の治療のために、軽度から中等度レベルのBPSDにも対応できる病棟を開設した。ここでは、肺炎急性期、大腿骨頸部骨折術後などでADL改善、リハビリテーションを必要とするにもかかわらず、認知症のために急性期病棟では十分な治療、看護ができない患者(このような例はきわめて多い)の治療継続を身体、精神両面から行う。治療にあたっては現疾患の主科医師とともに、老年科、神経内科、精神科といった認知症専門の医師が担当副科として加わることで主科医師の負担を軽減する。さらに、認知症認定看護師を配置してケアの充実も図る。

さらに、呼吸器疾患、整形外科疾患などの病棟において治療中の認知症患者の評価、対応をサポートするための院内回診チーム(Dementia Support Team; DST)を立ち上げた。これは、認知症専門医、認知症認定看護師、臨床心理士、精神保健福祉士がチームをつくり、院内を回診して、各病棟における認知症患者の問題についてアドバイスし、必要に応じて、認知症身体合併症治療病棟への転棟適応の判定を行う。このような試みは他施設でも始められている⁴⁾。認知症身体合併症治療病棟の開設およびDSTの立ち上げにより、認知症患者の一般病棟での受け入れが改善し、地域連携に貢献することが期待される。

表2 認知症専門医療機関による地域連携の2つの型

直接的連携

地域連携パスの使用、研修会などによる相互交流などにより、患者の転院、紹介などを円滑に行うことをめざす。

間接的連携

専門医療機関内の認知症BPSD及び身体合併症診療能力を上げることで、患者受け入れ能力を向上させる。院内に認知症入院治療支援体制を構築することが必要である。

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特集 認知症医療に必要な知識

介護保険のシステム*

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Key Words : care insurance, dementia, nursing-care

介護保険の成立

認知症はせん妄、うつ病とともに老年精神医学における3つの主要疾病の一つをなしている。認知症の診療を実践するためには高齢者医療の特性を理解する必要がある。特に重要なのは疾患治療という医学的な対処と、生活機能障害に対する介護という側面の複合的対応が求められるという点である。介護保険はさまざまな問題点はあるものの、高齢者の特性に対応するために導入されており、認知症の臨床においては必ず必要となるシステムである。

この20年余りの間で、高齢者医療・福祉を取り巻く状況で最も大きく変化したものは介護・ケアである。介護保険法が制定されるまでは、老人保健法と老人福祉法などにより高齢者の介護に関する制度を制定していた。しかし、高齢者が増加し医療費増加(財源不足)に伴う制度持続の難しさや、地域や施設によるサービスの格差、絶対的な施設不足などが生じ、新たな制度が必要とされた。特に、1973年の老人医療費無料化により、70年代後半から、各地で「老人病院」が急増した。介護施設はほとんどなく、病院が高齢者介護の受け皿となったためである。そこでは高齢者のためのケアといえるほどのことは

行われなかったし、また、方法論も知られていなかった。認知症は家族が面倒をみるものという考えが支配的で、中曽根首相が「老後は家族でみるもの」と公に語っていた時代であった。もちろん家族のみで介護できるはずもなく、認知症をはじめとする高齢患者は「ケアの場所」でなく「居場所」を求めてさまようことになった。そのような状況の後、わかりやすい負担金の納付方法と制度持続のための社会保障制の導入、社会的入院を防ぐための介護施設や介護支援サービスの充実などを行い、高齢者が本当に必要としている介護、支援サービスを受けることができるような制度として2000年に介護保険法は制定された。介護保険制度の導入後、ケアマネージャーや福祉介護士など新しい職種が参加し「社会システムとしての介護」という概念が日本中に広がったことで、それまでになかった高齢者介護という考え方が定着したことは評価に値する。

介護保険法では制度維持のために5年ごとの制度見直しが制定されており、それまでの状況や、その後の見直しを考慮し現在までに、2006年4月に改正案が施行され、さらに2011年6月に一部改正のための法案が可決され、2012年から施行予定となっている。2006年の改正の主な背景としては、介護保険制度が制定されてから介護保険の認定を受ける人が国の予想を遥かに超え、制度の維持が難しくなるという懸念が出

* The care insurance system in Japan.

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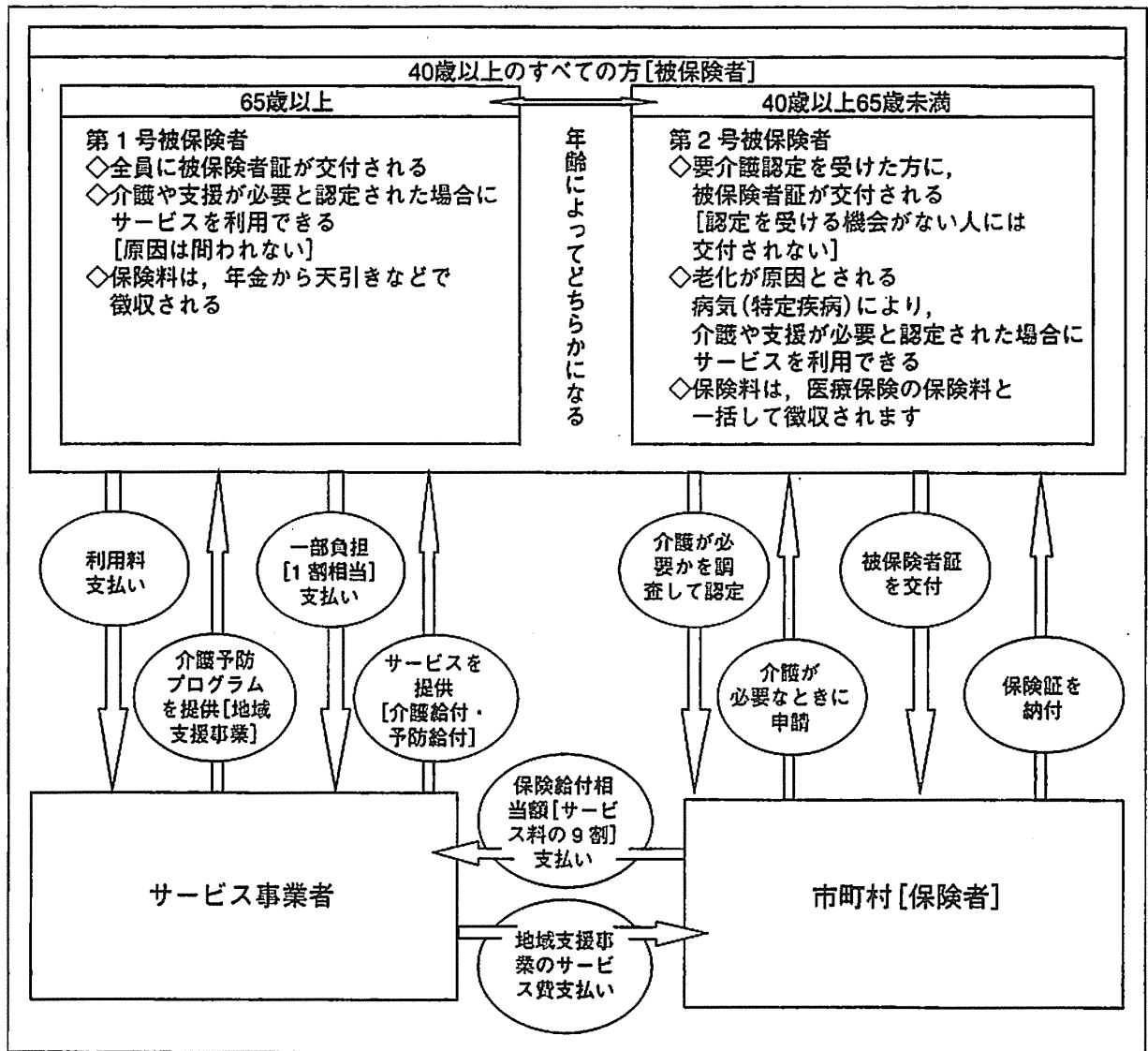


図1 介護保険のしくみ

てきた。さらに、利用者増加に伴う重度介護が必要な人に見合った介護を行うことの難しさなどにより、要介護状態からの脱却、要介護状態に至る前の予防、サービスの質の向上の必要性が重視された。しかし、その市区町村、施設により行う介護サービス自体に違いがあるのに対して、制度の見直しは全国一律で行われるため、今まで受けていた介護サービスを受けることが難しくなる、介護サービスを受ける時間の減少、利用者の負担費用の増加などの問題も抱えており、今後の制度改正にも注目が集まっている。

介護保険のシステム(図1)¹⁾

介護保険は保険を利用する被保険者と制度を管理、運営する保険者で成り立っている。被

保険者は、自分の住民票のある地域に住んでいることが条件である。次に介護保険料を支払っている必要がある。被保険者は2種類あり、第1号被保険者とは65歳以上で、日常生活を一人で行うのが困難と判断された要介護認定、要支援認定を受けている者であり、第2号被保険者とは40～65歳未満で、医療保険に加入しており、介護保険法に規定されている16種類(2009年現在)の特定疾病(主に原因が年齢によると思われる病気、表1)を要因とした要介護認定、要支援認定を受けている者を指す。特定疾病の中で精神医療と関連するのは初老期における認知症である。原因疾患が何であるかは問わないが、後述する医師の意見書には初老期という言葉必ず付加しなければならない。保険者は、基本的には市