

## Development and Validation of the Outcomes and Assessment Scale for Dementia Care

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**Objective :** To validate the Outcome and Assessment Scale for Dementia Care (OASDC) by comparison with the Multidimensional Observation Scale for Elderly Subjects (MOSES). **Methods :** The targets were 126 Japanese nurses, together with 126 of their demented patients. The self-administered questionnaire asked the nurses about the condition of their patients. The questionnaire consisted of 20 OASDC items, including the base attributes of the nurses and their patients, and 40 MOSES items. OASDC was subjected to a factor analysis and the correlations between OASDC and MOSES were explored. **Results :** The factor analysis revealed that OASDC had 5 factors : Self-care ; Tranquility ; Social role ; Behavioral and Psychological Symptoms of Dementia (BPSD),; and Caregiver and the cumulative contribution ratio of all five factors was 63.1%. There was a significant correlation between OASDC and MOSES except for the items of care factors ( $r=0.201$  to  $0.926$ ,  $p<0.05$ ). **Conclusion :** The evaluation almost completely secured the validity of the construct validity and contemporary validity of the OASDC. (Kitakanto Med J 2012 ; 62 : 23~29)

**Key words :** OASDC, MOSES, outcome, dementia, care

### I. Introduction

Tom Kitwood has proposed that the concept of dementia care should be changed from the old “Medical Model” to a new model of “Person-Centered Care”.<sup>1</sup> Kitwood also developed Dementia Care Mapping (DCM), which is an evaluation tool for dementia care in the elderly that follows the vision of Person-Centered Care.<sup>1</sup> In DCM, evaluations are made by observing the relationships between caregivers and dementia patients. The results of the evaluation are fed back to the caregivers, and this is reportedly effective in the improving quality of dementia care.<sup>2</sup> However, to develop a good command of DCM, people need to receive special training and to pass a test called Mapper to acquire a license.<sup>1,2</sup> DCM may therefore take some time to become widely used in the dementia care field.

The Mini-Mental State Examination (MMSE) has been widely used for a long time in outcome evaluation in dementia therapy and dementia care. The MMSE consists of a total of 11 questions and is a standard screening test for dementia in Western coun-

tries. However, because this method asks patients to answer questions and follow instructions, patients sometimes feel uncomfortable. Furthermore, the MMSE is used to assess cognitive function, not to evaluate care. There are other qualitative evaluation scales that are used to assess dementia patients and cares. They include Lawton’s Quality of Life in Alzheimer’s Disease (QOL-AD)<sup>3</sup> and the Multidimensional Observation Scale for Elderly Subjects (MOSES).<sup>4</sup> The QOL-AD has evaluation items such as pleasure and contentment, and it also contains items for assessing positive aspects in dementia patients. MOSES evaluates various points in dementia patients, including their ADLs, cognitive function, and mental state, including self-care ability, disorientation, and depression. The QOL-AD consists of just 6 items that evaluate mental state, where as MOSES evaluates 40 items, although this number needs to be decreased for effective and prompt assessment of patients.

I developed the Japanese version of the Outcome and Assessment Scale for Dementia Care (OASDC) in 2007.<sup>5</sup> Clinical settings favor the OASDC than MOSES, because the former has a smaller number of

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Received : November 7, 2011

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evaluation items and enables us to study various aspects of patients.<sup>6</sup> In 2010, I decreased the number of items in the OASDC from 26 to 20 and asked nursing students to use it on their 45 dementia patients. Cronbach's  $\alpha$  coefficient ranged from 0.84 to 0.86, confirming the scale reliability of the OASDC (20 items).<sup>7</sup> In 2011 software was developed for the OASDC; it enables the outcome evaluation function to start automatically when the score of items assessed are entered, and it also informs time-dependent changes according to individual and institution.<sup>8,9</sup> Caregivers of dementia patients are expected to use the OASDC widely because of its simplicity and reliability.

The objective of this study was to development the Outcome and Assessment Scale for Dementia Care. This study increased the number of targets in order to elucidate the components and features of the OASDC and to examine the relationship between the OASDC and MOSES. I aimed to study the validity of the 20 OASDC items in more detail in an effort to make the OASDC an even more valuable measure for improving the quality of dementia care.

## II. Method

### 1. Subjects

The study was performed from July to October 2010 and targeted 126 nurses in charge of dementia care and 126 of their dementia patients in hospitals, home nursing care services, and nursing homes in Japan. In a lecture at a nursing care workshop, and I explained the 236 nurses, and 126 agreed to be volunteer participants gave their informed consent. Of the 236 nurses, 150 returned the questionnaire (response rate: 63.6%), but the number of valid responses was 126 (valid response rate: 53.4%) because 24 did not answer MOSES.

### 2. Study method and contents

A self-administered questionnaire written in Japanese was delivered to the nurses. They were instructed to assess the elderly dementia patients in their care and to tick the answers that fitted the patients' condition. The evaluation items included the background of the nurses and patients, 20 OASDC items that I had developed, and 40 MOSES items. The severity of dementia was evaluated by using the degree of independence in daily life of elderly subjects with dementia, as defined by the Japanese Ministry of Health, Labor, and Welfare; this assessment is widely used in dementia care settings in Japan. The degree of independence in daily life is defined as follows: Grade I, "a certain degree of dementia, but almost completely independent in dementia daily life at home

and in the community;" Grade II, "some symptoms, behaviors, and difficulty in communication that interfere with daily life, but independent under supervision;" Grade III, "symptoms, behaviors, and difficulty in communication that interfere with daily life, and needing long-term care;" Grade IV, "symptoms, behaviors, and difficulty in communication that frequently interfere with daily life, and definitely needing long-term care;" and Grade M, "severe psychological symptoms and Behavioral and Psychological Symptoms of Dementia (BPSD) or serious physical conditions that need tertiary care."<sup>10</sup>

The OASDC is a tool that I developed from 2007 to 2011 according to the following procedures. Currently, the OASDC consists of 20 varied evaluation items, including Self-care, BPSD, and Caregiver items (See APPENDIX). Each items assessment has answers from 0 to 4; a score of 0 is normal, and the score increases with increasing seriousness of the condition. The evaluation is performed before and after the start of care in order to judge the outcome of care; it is thus used in the same way as the "home nursing care/outcome evaluation system" used in the USA and Japan.<sup>11,12</sup>

The Multidimensional Observation Scale for Elderly Subjects (MOSES; Helmes et al. 1987) was designed to evaluate several aspects of functioning in the elderly dementia patient. The MOSES is appropriate for use in many settings caring for the elderly, such as continuing-care facilities, homes for the aged, nursing homes, and psychiatric facilities.<sup>13</sup> The reliability and validity of MOSES have been tested.<sup>4</sup> Furthermore, MOSES has been used to validate the development of the QOL scale in dementia patients.<sup>14</sup> This study used MOSES for the above-mentioned reasons.

MOSES The number of evaluation items in MOSES is 40, consisting of 8 items each from the 5 fields of Self-care, Disorientation, Depression, Irritability, and Withdrawal. Each assessment has answers from 1 to 5, and the scores increase with increasing seriousness of the condition.<sup>13</sup> Furthermore, the scores are added together by field and total scores are used in the evaluation.

### 3. Analytical method

A factor analysis (varimax rotation) of the 20 OASDC items was performed to confirm the construct validity. In addition, Spearman's correlation analysis was performed to examine the relationship between the OASDC and MOSES in order to study the concurrent validity. A reliability analysis was performed to confirm the internal consistency by calculating Cronbach's  $\alpha$  coefficient for the 20 OASDC items. These ana-

lyses were performed with the statistical software SPSS, ver 15.

#### 4. Ethical considerations

Informed consent was obtained from the subjects after they had been given a verbal explanation of the study objectives and method. No information that identified the subjects' names was collected. Data were converted to numbers and analyzed. The study was approved by the Mihara Memorial Hospital ethics committee (045-01 Basic study).

### III. Results

The backgrounds of the participants were as follows (Table 1). There were 126 elderly patients with dementia, consisting of 6 (4.8%) of less than 65 years of age, 120 (95.2%) of 65 years or more. There were 95 hospital inpatients (75.4%), 20 who received home nursing care (15.9%), 7 nursing home dwellers (5.6%), and 4 living in places other than the above-mentioned (3.2%). The Japanese Ministry of Health, Labor, and Welfare degree of independence in dementia daily life was Grade I in 8 (6.3%), Grade II in 30 (23.8%), Grade III in 36 (28.6%), Grade IV in 42 (33.3%), Grade M in 5 (4.0%) and non-answer in 5 (4.0%). Among the nurses, the number of years of experience in performing dementia care was less than 5 years in 37 (29.4%) and over 5 years in 85 (67.5%); 4 did not answer the question (3.2%).

Factor analysis of the 20 OASDC items revealed that there were 5 major factors and the cumulative contribu-

tion ratio of the 5 factors was 63.1% (Table 2). The first factor was Self-care, consisting of 8 items (Grooming, Bathing, Eating, Using the toilet, Walking, Rest/sleep, Preventing accidents, and Communication). The second factor was Tranquillity, consisting of 4 items (Smile, Greeting, Expressing desire, and Caregiver's stress/fatigue). The third factor was Social role, consisting of 3 items (Management of money, Playing own role effectively, and Having a fulfilling religion/interests). The fourth factor was BPSD, consisting of 3 items (Psychological symptoms, Behavior disorder, and Maintaining appearance). The fifth factor was Caregiver, consisting of 2 items (Accepting people with dementia and Learning how to relate to and care for others).

**Table 1** The backgrounds of the participants n=126

Items	Answer	n	%
Age	65>	6	4.8
	65≤	120	95.2
Dementia level*	Grade I	8	6.3
	Grade II	30	23.8
	Grade III	36	28.6
	Grade IV	42	33.3
	Grade M	5	4.0
	NA	5	4.0
Place	Hospital	95	75.4
	Home	20	15.9
	Nursing Home	7	5.6
	Others	4	3.2

\* The Japanese Ministry of Health, Labor, and Welfare degree of independence in dementia daily life

**Table 2** Factor Analysis of OASDC by varimax rotation

Items	Factor					communality	M	SD	
	1	2	3	4	5				
Self-care	Grooming	0.806	0.246	0.074	0.232	0.051	0.772	1.897	1.079
	Bathing	0.706	0.114	0.253	0.276	0.032	0.652	2.310	1.160
	Eating	0.682	-0.032	0.322	-0.136	0.020	0.588	1.296	0.960
	Using the toilet	0.869	0.209	0.145	0.121	0.036	0.835	2.040	1.536
	Walking	0.810	0.122	0.009	0.056	-0.038	0.675	1.560	1.187
	Rest/Sleep	0.590	0.019	0.275	0.138	0.124	0.459	2.091	1.162
	Preventing accidents	0.525	0.092	0.324	0.309	0.341	0.602	2.152	0.984
	Communication	0.583	0.525	0.128	0.120	0.056	0.650	1.718	0.916
Tranquillity	Smile	-0.092	0.717	0.215	0.309	0.036	0.665	1.722	0.960
	Greeting	0.330	0.608	-0.077	0.046	-0.091	0.495	0.984	1.226
	Expressing desire	0.315	0.687	0.130	-0.291	0.008	0.674	1.608	1.163
	Caregiver's stress/fatigue	0.220	0.528	0.168	0.031	0.289	0.392	1.762	1.076
Social roll	Management of money	0.461	0.072	0.627	0.117	-0.060	0.625	3.318	1.078
	Playing own role effectively	0.343	0.204	0.677	0.118	0.144	0.652	2.738	1.508
	Having a fulfilling religion/interests	0.084	0.152	0.757	0.139	0.063	0.627	3.323	1.186
BPSD	Psychological sytoms	0.206	-0.084	0.339	0.615	0.036	0.544	2.540	1.325
	Behavior disorder	0.114	0.070	0.098	0.856	-0.020	0.761	2.088	1.529
	Maintaining appearance	0.412	0.305	-0.011	0.522	0.144	0.556	2.087	1.508
Caregiver	Accepting people with dementia	0.035	-0.040	0.175	-0.157	0.812	0.718	1.260	1.273
	Learning how to relate to and care for others	0.061	0.197	-0.057	0.241	0.766	0.680	1.574	1.076
Rotation	Sume of squard loadings	4.772	2.258	2.072	1.992	1.527			
Extraction	Sume of squard loadings • compulative %	23.859	35.146	45.507	55.467	63.105			

**Table 3** Correlation among Items of OASDC

	Self-Care	Tranquillity	Social Roll	BPSD	Caregiver
Self-Care	—	0.457**	0.629**	0.531**	0.154
Tranquillity		—	0.370**	0.287**	0.171
Social Roll			—	0.461**	0.232*
BPSD				—	0.177
Caregiver					—

\*\* $p < 0.01$ , \* $p < 0.05$

The results of a correlation analysis among the 5 OASDC factors (i. e. the total scores of the evaluation items) showed that there were significant correlations between all pairs of factors except between Caregivers and Self-care, Tranquillity, or BPSD ( $p < 0.05$ ) (Table 3). Investigation of the correlations between the 5 OASDC factors (i.e. the total scores of the evaluation items) and the 5 MOSES fields (the total scores of the evaluation items) revealed significant correlations, except between OASDC Caregivers and MOSES Depression, Irritability, or Withdrawal, and between OASDC Tranquillity and MOSES Irritability (Table

4). Especially strong correlations were observed between the OASDC and MOSES Self-care items ( $r = 0.926$ ,  $p < 0.01$ ). Furthermore, a strong correlation was observed between the total OASDC score and the total MOSES score ( $r = 0.808$ ,  $p < 0.01$ ). Figure 1 is a scatter diagram explaining these results; it shows a uniform distribution of positive correlation.

Cronbach's  $\alpha$  coefficient for the OASDC was 0.881 for the 126 subjects.

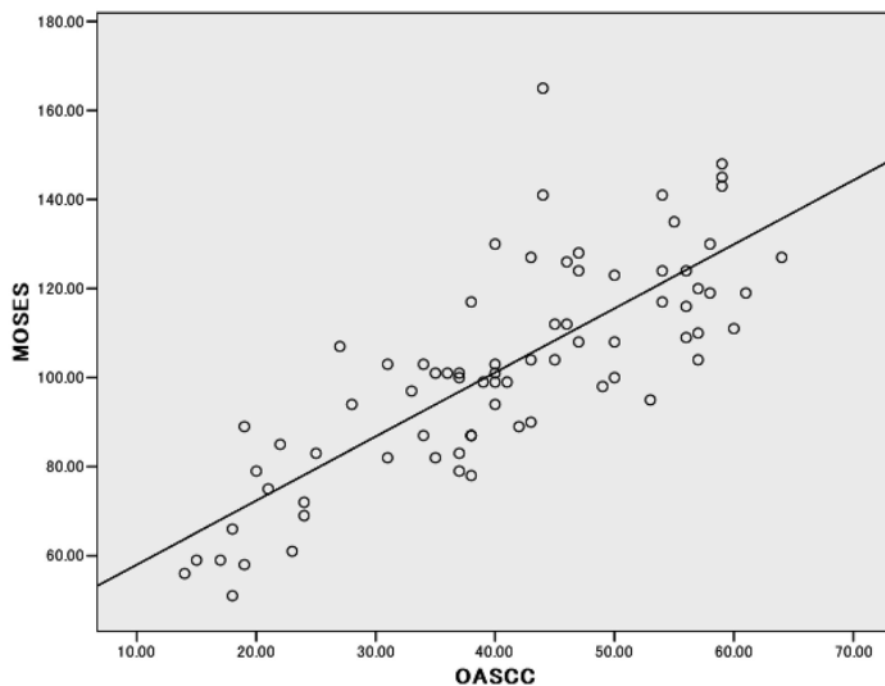
#### IV. Discussions

The factor analysis of construct validity extracted 5 factors. The sum of squares of the loading son each factor was over 1.0 and the cumulative contribution ratio exceeded 63%; these results indicated stability. The first factor in the OASDC is Self-care. MOSES and other QOL scales for the elderly with dementia also include self-care items, suggesting that self-care is a key factor in outcome evaluation. The second factor is Tranquillity, which consists of 4 items, Smile, Expressing Desire, Greeting, and Caregiver Stress and

**Table 4** Correlation of OASDC with MOSES

Items	MOSES					Total
	Self-Care	Disorientation	Depression	Irritability	Withdrawal	
OASDC						
Self-Care	0.926**	0.761**	0.313**	0.393**	0.359**	0.798**
Tranquillity	0.490**	0.538**	0.201*	0.190	0.382**	0.543**
Social Roll	0.665**	0.602**	0.292**	0.325**	0.313**	0.567**
BPSD	0.478**	0.514**	0.319**	0.515**	0.207*	0.548**
Caregiver	0.238*	0.255**	0.090	0.179	0.062	0.213
Total	0.866**	0.790**	0.363**	0.473**	0.431**	0.808**

\*\* $p < 0.01$ , \* $p < 0.05$

**Fig. 1** Correlation of OASDC and MOSES

## APPENDIX (Table 5)

## OASDE Items

Please check the number of the behavior that applies most to the patient.

Choose the behavior that most closely represents the past one week.

**1. Self-care Items (9)**① Grooming**Can they groom themselves?**

- 0 : They can groom themselves
- 1 : They can, if things are prepared and they are spoken to and watched
- 2 : They can wash their face, etc., but need partial help
- 3 : They cannot do it by themselves and need total assistance
- 4 : They cannot groom themselves (rejection, etc.)

② Bathing**Can they take a bath by themselves?**

- 0 : They can take a bath by themselves
- 1 : They can, if things for the bath are prepared and they are spoken to and watched
- 2 : If they are helped in and out of the tub or have partial help, they can take a bath (wash their bodies, rinse off soap, etc.)
- 3 : They cannot take a bath by themselves and need total assistance
- 4 : They cannot take a bath by themselves (rejection, etc.)

③ Eating**Can they feed themselves?**

- 0 : They can do all the motions of eating by themselves
- 1 : They can, if meals are prepared and they are spoken to and watched
- 2 : They can swallow and chew food, but they need partial help to bring the food to their mouth
- 3 : They swallow poorly and need total assistance
- 4 : Oral intake is impossible (gastrostomy, IVH, etc.)

④ Using the toilet**Can they use the toilet by themselves?**

- 0 : They do toilet motions independently by themselves
- 1 : They can, if things are prepared and they are spoken to about using the toilet and watched
- 2 : If they are given partial help in moving and taking off /putting on pants, they can use the toilet (they can wipe themselves, etc.)
- 3 : They can use the toilet if they have total assistance
- 4 : They cannot use the toilet at all (they always use diapers)

⑤ Walking**Can they move by themselves?**

- 0 : They can walk on their own legs
- 1 : They can walk, if they use a cane or walker and are prompted to be careful and are watched
- 2 : If they have partial help in using a wheelchair or support in walking, they can move about (need help standing, etc.)
- 3 : They cannot move in a wheelchair and need total assistance
- 4 : They cannot use a wheelchair and need to be moved by stretcher or bed

⑥ Rest/Sleep**Can they arrange sleep and rest time by themselves?**

- 0 : They can predict fatigue beforehand and pace themselves by taking a rest
- 1 : If they feel tired, they can rest by themselves
- 2 : They can rest if they are prompted to
- 3 : They can rest if they use medicine
- 4 : They cannot rest

⑦ Preventing accidents**Can they prevent accidents by themselves?**

- 0 : They can prevent accidents by themselves
- 1 : If the environment is prepared, someone counsels and watches over them, they can prevent accidents
- 2 : They need partial help from others to guide and watch over them
- 3 : They need someone to constantly guide and watch over them
- 4 : They cannot prevent accidents (accidents are always happening)

⑧ Communication**Does communication with the user make sense?**

- 0 : It always makes sense
- 1 : It usually makes sense
- 2 : It makes sense about half of the time
- 3 : It usually doesn't make sense
- 4 : It makes no sense

**2. Tranquillity Items (4)**① Smile**Do they smile?**

- 0 : They smile every day.
- 1 : They smile almost every day.
- 2 : They smile sometimes.
- 3 : They don't smile much.
- 4 : They never smile.

② Greeting**How do they respond when greeted?**

- 0 : They can respond so that the other understands their words and expressions
- 1 : Their words are not clear, but they nod, etc. in response
- 2 : They can make some kind of response

- 3 : They often don't respond, but do so at times
- 4 : There is never any response

③ Expressing desire**Can they express their desires?**

- 0 : They can always do so
- 1 : They can often do so
- 2 : They can if they are asked
- 3 : They can at times if they are asked
- 4 : They can never do so

④ Caregiver's stress and fatigue**Is the caregiver's stress and mental fatigue obvious?**

- 0 : There is no tiredness
- 1 : Some fatigue is evident
- 2 : There is much fatigue
- 3 : The fatigue is tremendous
- 4 : There is a need for hospitalization and treatment for fatigue

**3. Social roll Items (3)**① Management of money**Can they manage money by themselves?**

- 0 : They can do it all by themselves
- 1 : For normal financial affairs, they can manage without any counsel
- 2 : If someone counsels and watches over them, they can do it
- 3 : They need someone to be their representative in everything
- 4 : They can't handle money at all

② Playing own role effectively**Do they make a playing own role effectively?**

- 0 : Almost every day
- 1 : A few times a week
- 2 : A few times a month
- 3 : Every two or three months
- 4 : Never

③ Having a fulfilling religions/ interests**Do they still have opportunities to fulfill interests and gain purpose in life?**

- 0 : Almost every day
- 1 : A few times a week
- 2 : A few times a month
- 3 : Every two or three months
- 4 : Never

**4. BPSD (3)**① Psychological symptoms**How often have these psychological symptoms occurred in the past week?**

- 0 : Not all
- 1 : Rare (1-3 days for only short times)
- 2 : Sometimes (More than 3 days for short periods or 3 days or less if all day)
- 3 : Often (More than 3 days, most of the day)
- 4 : Everyday

② Behavior disorder**How often have these behavior disorders occurred in the past week?**

- 0 : Not all
- 1 : Rare (1-3 days for only short times)
- 2 : Sometimes (More than 3 days for short periods or 3 days or less if all day)
- 3 : Often (More than 3 days, most of the day)
- 4 : Everyday

③ Maintaining appearance**Do they keep a semblance of who they are in how they look?**

- 0 : They always maintain their appearance
- 1 : They basically maintain their appearance
- 2 : They can maintain their appearance about half the time
- 3 : They often can't maintain their appearance
- 4 : They cannot maintain their appearance

**5. Care Giver Items (2)**① Accepting people with dementia**Does the caretaker accept the person with dementia?**

- 0 : They accept them
- 1 : They partially accept them, but there is some fatalism and resignation
- 2 : They cannot accept them ; confusion, anger, rejection is evident
- 3 : They acknowledge the dementia ; puzzlement and denial is evident
- 4 : They don't know there is dementia

② Learning how to relate to and care for others**Has the caretaker gained care techniques (including relating)?**

- 0 : They understand dementia and can do care
- 1 : They basically understand dementia care and can do it
- 2 : They can do normal care, but they don't understand dementia care
- 3 : They can do only simple kinds of normal care
- 4 : They do not understand normal care or dementia

Fatigue ; these items are intended to objectively evaluate the sense of security and well-being in elderly dementia patients. During the OASDC development process, Smiling was the item defined by caregivers in a clinical setting as being the most important<sup>5</sup> and the most characteristic of this scale. Smiling reveals feelings of security and pleasure ; because a smile can last a long time, even in elderly dementia patients, it can be easy for caregivers to evaluate. The reason why this factor included Caregiver stress and fatigue was that the well-being of the demented elderly is related to the stress of their caregivers. The third factor is Social role, which consists of 3 items, Money management, Making a positive contribution, and Having a fulfilling religion/interests. Lawton<sup>4</sup> stated that social behavior was the most important factor among the QOL evaluation items for the demented elderly. In light of this opinion, the OASDC included these items as a primary factor. The fourth factor, BPSD, consists of 3 items, Psychological symptoms, Behavior disorder, and Maintaining appearance. The Clinical Dementia Rating always evaluates Cognitive function. The BPSD factor of the OASDC also includes psychological symptoms and behavior disorder ; these are influenced by the environment, they can be easily improved by care. It also includes Maintaining Appearance. Decline in cognitive function in the demented elderly influences their appearance and was therefore included here as an objective evaluation item. The fifth factor is Caregiver, which consists of Accepting people with dementia and Learning how to relate to and care for others. One of the standard scales for caregivers is The Zarit Burden Interview (ZBI),<sup>15</sup> which evaluates the condition of caregivers. There are only a few scales that can simultaneously evaluate the demented elderly and their caregivers. Shimanouchi et al.<sup>12</sup> defined items that evaluate caregivers as being important in outcome evaluation scales for home nursing care, because caregivers are directly responsible for the demented elderly living at home and influence the outcomes of care.<sup>12</sup> Shimanouchi et al. therefore incorporated both the elderly receiving home nursing care and caregivers into their outcome evaluation. In consideration of the fact that the majority of the demented elderly spend almost all day in their homes, it is completely natural that the OASDC includes caregiver items.

The above-mentioned findings indicated that the OASDC could successfully evaluate the outcome of dementia care in terms of various factors, namely Self-care, Tranquility, Social role, BPSD, and Caregiver.

The abundance of correlations between OASDC items and MOSES items almost completely secured the validity of the OASDC. However, the OASDC Car-

giver items were correlated with only a couple of MOSES items, indicating that accepting people with dementia and learning how to give them appropriate long-term care were not always influenced the condition of the demented elderly. Some reports have stated that those who care for these people have a great burden of care.<sup>16,17,18</sup> However, accepting people with dementia and learning how to give them appropriate care are not related to the severity of dementia<sup>18</sup> but are instead influenced by the caregivers' positive and/or negative cognition of dementia care.<sup>19</sup>

Therefore, the validity of the Caregivers evaluation items may need to be analyzed relative to those in the other caregiver scales such as the ZBI ; this will be our future task.

In general, Cronbach's  $\alpha$  coefficient is calculated to assess internal consistency, and scores between 0.7 and 0.9 indicate reliability. Cronbach's  $\alpha$  coefficient of the OADSC in our 126 subjects was 0.881, thus proving the reliability of the scale's internal consistency.

In light of the above-mentioned results for the validity of the OADSC, we consider that (1) use of the OADSC may enable a shortening of the time required to evaluate the outcomes of various types of care interventions ; and (2) the OADSC may be used as a scale to comprehensively evaluate patients' daily and social lives, as well as their symptoms.

This study was valid response rate : 53.4% . It is necessary to get results of valid response rate.

In future, inter-rater and test-retest reliability will also need to be validated. If the English version is needed overseas, correlations between the OADSC questionnaires that I translated into English and the English version of MOSES will need to be studied in English speakers.

### Acknowledgments

I gratefully acknowledge the nurses and elderly dementia patients who participated in this study, and Professor Haruyasu Yamaguchi of Graduate School of Health Sciences, Gunma University, who gave me guidance. This study was supported partly by a Grant-in-Aid for Scientific Research, awarded by the Ministry of Education, Culture, Sports, Science and Technology (Subject No.22592578).

### References

1. Kitwood T. A new approach to the evaluation of dementia care. *Journal of Advances in Health & Nursing Care* 1992 ; 1 : 40-41.
2. Brooker D, Foster N, Banner A, Payne M. et al. The efficacy of Dementia Care Mapping as an audit tool : report of a 3-year British NHS evaluation. *Ageing & Mental Health* 1998 ; 2(1) : 60-70.

3. Powell ML. Quality of Life in Alzheimer Disease, Alzheimer Disease and Associated Disorders 1994 ; 8(3) : 138-150.
4. Helmes E, Kalman G, Csapo, Short JA. Standardization and Validation of the Multidimensional Observation Scale for Elderly Subjects (MOSES), Journal of Gerontology 1987 ; 42(4) : 395-405.
5. Uchida Y. Development of An Original Outcomes Assessment in Dementia Care, The Kitakanto Medical Journal 2007 ; 57(3) : 231-238.
6. Uchida Y. Development of Outcomes Assessment Scale for Dementia Care —Possibility for use and improvement—, The Kitakanto Medical Journal 2007 ; 58(1) : 9-16.
7. Uchida Y. Factor influencing outcome measures in short-term effective dementia care —Evaluation analysis before and after clinical training of nursing students—, Journal of Japanese Society for Dementia Care 2011 ; 10(1) : 11-19.
8. Uchida Y. Development and weighted scores of Simple version Outcomes Assessment in Dementia Care, The 14<sup>th</sup> Annual Scientific Meeting of Japan Academy of Gerontological nursing 2009 : 165.
9. Uchida Y. Development soft-wear of The Outcomes Assessment in Dementia Care, The 16<sup>th</sup> Annual Scientific Meeting of Japan Academy of Gerontological nursing 2011 : 111.
10. Notification No.0331001 concerning Certification of Long-Term Care Needs, 2006. Division of Health for the Elderly, Health and Welfare Bureau for the Elderly, Ministry of Health, Labour and Welfare, “Guidelines for preparation of accreditation of long-term care needs,” “Guidelines for preparation of written opinions by primary physicians,” and “Diagnostic criteria for specific diseases of the elderly.”
11. Shaughnessy PW, Crister KS. Outcomes-Based Quality Improvement—A Manual for Home Care Agencies on How to Use Outcomes, USA : National Association for Home Care, 1995. Chapter 4.
12. Shimanouchi S, Tomoyasu N, Uchida Y. Home Care-Outcomes Evaluation And Method of Quality Improvement, Tokyo : Igakushoin, 2002 : 32.
13. Heamens E. Multidimensional Observation Scale for Elderly Subject (MOSES), Psychopharmacologybulletin 1988 ; 24(4) : 733-745.
14. Martin CK, Linda S. Kathleen RK et al. Responsiveness of the quality of life in late-stage dementia scale to psychotropic drug treatment in late-stage dementia. j dementia and geriatric cognitive disorder 2004 ; 29 : 82-85.
15. Zarit SH, Reever KE, Bach-Peterson J. Relatives of the impaired elderly : correlates of feelings of burden. Gerontologist 1980 ; 20 : 49-655.
16. Cho E, Lee M, Kim E, Neville E Strumpt. The Impact of Informal Caregivers on Depressive Symptoms Among Older Adults Receiving Formal Home Health Care, Geriatric Nursing 2011 ; 32(1) : 18-21.
17. Baillie V, NorbeckJ, Barnes L : Stress, social support, and psychological distress of family caregivers of the elderly. Nursing Research 1988 ; 37 : 217-222.
18. Karlikaya G, Yukse G, Varlibas F, et al. Caregiver Burden in Dementia the Turkish Population, The Internet Journal of Neurology (2009) <http://www.ispub.com/journal/the-internet-journal-of-nerogy/volume-4-number>
19. Atsuko S. Areview of studies on caregivers well-being, The Association of Social Studies, Doshisha University 2008 ; 85(1) : 83-114.