

**Materials**

# Prevalence of Problematic Behaviors in the Ambulant Elderly with Dementia

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## Abstract

This study was designed to ascertain tendencies in the development of problematic behavior among ambulant elderly with mild and moderate dementia. Ambulant elderly with dementia who had normal eyesight and audibility and were over 65 years of age (N=466), were selected based on the Basic Survey for Eligibility for long-term care insurance, conducted in seven municipalities of Aichi prefecture, in Japan. In order to compare the prevalence of problematic behaviors, participants were divided into two groups based on their level of dementia, mild (312 people) and moderate (134 people). The tendencies in problematic behaviors were compared between the two groups using data for “Problematic Behavior” and “Capacity for Mutual Understanding of Purpose” in the survey. The prevalence of problematic behaviors was found to be significantly different between the two groups, being greater in the elderly with moderate dementia group than in the elderly with mild dementia group. Furthermore, there were significant differences in the capacity for mutual understanding of purpose between the groups. It is important to develop and apply support systems that can adequately reduce daily difficulties caused by problematic behaviors in order to effectively support the elderly with dementia based on these results.

## Introduction

Problematic behaviors (See, #1) can be observed in some elderly individuals with dementia following the deterioration of intellectual faculties. Previous studies have shown that there are many individual differences in behavioral disorders of the elderly. There are often differences in behavioral disorders depending on the degree of dementia [1]. Furthermore, at a certain stage, especially in the medium term of dementia, the prevalence of problematic behaviors reaches their peak [2].

Ambulant elderly with dementia have many difficulties caused by problematic behaviors. Many difficulties caused by problematic behaviors confuse the elderly and make care-giving difficult. They also impose considerable burdens on caregivers. Moreover, one study [3] has pointed out that caregiver’s reactions may depend more on the type of problem behavior than on its frequency. Another study [4] has reported that

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the perceived burden is more serious in caregivers nursing the elderly with moderate dementia than those with mild dementia when the elderly person can move about freely on their own.

One problematic behavior related to ambulant elderly for example, is wandering. Wandering has been investigated in a number of studies. It has been described as an “aimless, unpredictable behavior” [5] [6]. Whereas, it is known that wandering includes certain patient-specific patterns and purposes. According to Sugai [7], wandering of the aimless emotional type gradually increases with the progress of dementia. However, there are few systematic theories of wandering.

Elderly people with dementia need support based on the degree and state of their dementia. However, it still remains difficult to judge the differences in the degree of dementia and to determine the appropriate support that is needed. If elderly people with dementia are able to live comfortably, their positive health condition will be maintained for a longer period of time and the possibility of living at home under the care of their family increases. Therefore, it is necessary to ascertain the tendencies for problematic behaviors and develop appropriate support systems.

Although, the problematic behaviors of elderly people with dementia have been investigated using various methods, there are only a few analyses that address both the physical and mental states of the elderly. Therefore, being the first stage of a larger study, this study was designed to ascertain the tendencies in the development of problematic behaviors in ambulant elderly with mild and moderate dementia.

## Methods

The data analyzed in this study were those reported by assessors who had screened clients for long-term care insurance. This data was collected, in 2003, in a survey conducted on the adequacy of long-term care insurance for 5,918 insured people who had long-term care certification, in seven municipalities of Aichi prefecture, in Japan. All personal data concerning the participants was given to the present researchers with their names and addresses deleted and their insurance numbers recoded by the municipalities to protect their privacy rights.

### 1. Participants

Of the 5,918 insured people, we selected those participants that met the following two criteria: they possessed a degree of physical independence and a degree of dementia. They were 446 elderly adults (151 male, 295 female, age range 65-97 years; mean age  $81.11 \pm 6.80$ ). Their disabilities were defined as Level J/A (able to walk) according to the “Degree of Independence in Daily Living for the Elderly with Disabilities” and their dementia was defined as Rank II (mild) and III (moderate) according to the “Degree of Independence in Daily Living for Elderly with Dementia” (Meeting for study of the Long-Term Care Insurance system, 2003) [8] (See, #2). The participants were all ambulant and had normal eyesight and audibility.

Rank II and III elderly have deteriorated mental faculties. Therefore, they both are often arbitrarily categorized together as “ambulant elderly with dementia.” However, Rank II elderly are able to lead daily life independently if supervised, whereas Rank III elderly require constant nursing care. In the current study, the participants were divided into two groups based on the Rank of dementia: J/A·II (Group II, 312 people) and J/A·III (Group III, 134 people).

### 2. Procedure

The basic survey for eligibility for long-term care insurance is composed of nine major sections. In this study, however, only data from section seven related to “Problematic Behavior” (PB) and section six

related to “Capacity for Mutual Understanding of Purpose” (CMUP) were analyzed.

In the PB section of the survey, there are 19 items listed as problematic behaviors, such as victimization, repetitive speech, and constant wandering (See, #3). These items are scored using a three-point response scale: “Yes”, “Sometimes” and “No”.

The CMUP section of the survey is composed of 10 items to measure the capacity for mutual understanding of purpose. However, four of the 10 items were excluded from the analysis, because the two items concerning eyesight and audibility were already used as criteria for selecting participants, and because the other two items, “telling date of birth” and “telling own name”, could be considered as habitual behaviors often repeated in daily life. The remaining six items were used in the current analysis (See, #4). The six items were rated on a four-point response scale indicating degree of possibility. For the purposes of analysis, the four-point scale was reduced to a two-point scale indicating either that the item was possible or impossible.

### 3. Analysis

The prevalence of problematic behaviors and the capacity for mutual understanding of purpose using data from relevant sections were compared between the two groups, Group II and Group III elderly. Moreover, the six items in the CMUP section were each analyzed for their relation to each of the 19 items in the PB section for the two groups. Data was analyzed by chi-square tests. The significance level was set at 0.01 or below.

## Results

The prevalence of problematic behaviors was compared between Group II and Group III using responses to the PB section of the survey. It can be seen from Table 1, that the proportions of problematic behaviors were higher in Group III than in Group II, with the exception of sexually disturbed behavior.

As can be seen in Table 2, there was a difference between Group II and Group III in responses to each item in the CMUP section. Concerning the three items, “basic communication of intent,” “reaction to instructions”, and “recognition of place”, both groups showed more “possible” responses than “impossible” responses. However, for the two items, “understanding of daily routines” and “short-term memory”, both groups showed more “impossible” responses than “possible” responses. For “recognition of current season,” the proportion of “possible” responses was larger in Group II than in Group III, whereas that of “impossible” responses was larger in Group III than in Group II.

The relations between the PB and CMUP sections were analyzed and the results are shown in Tables 3-6. In order to achieve a more detailed analysis, the three responses of the PB section, “Yes”, “Sometimes”, and “No”, were reduced to two categories “Yes” and “No”. Incidences of “Sometimes” responses were included in the “Yes” category. The results are shown in just two responses; “Yes” and “No”.

In Group II, there was a significant relation between “basic communication of intent” and “constant wandering” (Table 3), between “recognition of current season” and “lack of composure,” and between “recognition of current season” and “leaving with inability to return” (Table 4).

Particularly in Group II, some of the elderly who wandered constantly were able to communicate their intent. Some of the elderly who were unable to calm themselves and who left without being able to return home could not fully recognize the seasons.

In Group III, there was a significant relationship between “basic communication of intent” and “repetitive speech,” “carelessness with fire,” and “allography” (Table 5). There was also a significant relation between “reaction to instructions” and “confabulation,” “leaving on one’s own accord,” “carelessness with

Table 1 Comparison of Problematic Behaviors between Group II and Group III

Item	(%)		
	Yes	Some-times	No
victimization	11.9 <b>18.7</b>	7.7 <b>8.2</b>	80.4 73.1
confabulation	7.4 <b>16.4</b>	3.5 <b>3.7</b>	89.1 79.9
visual or auditory hallucinations*	9.0 <b>22.4</b>	8.3 <b>10.4</b>	82.7 67.2
emotional instability*	9.9 <b>20.1</b>	9.6 <b>13.4</b>	80.4 66.4
reversal of day and night*	6.4 <b>30.6</b>	12.2 <b>14.9</b>	81.4 54.5
violent language and action*	3.5 <b>18.7</b>	7.4 <b>15.7</b>	89.1 65.7
repetitive speech*	30.4 <b>47.8</b>	<b>9.6</b> 9.0	59.9 43.3
talking loudly*	2.9 <b>16.4</b>	5.8 <b>14.9</b>	91.3 68.7
resistance to care*	9.0 <b>29.1</b>	15.4 <b>20.1</b>	75.6 50.7
constant wandering*	4.5 <b>30.6</b>	5.8 <b>13.4</b>	89.7 56.0
lack of composure*	1.3 <b>16.4</b>	5.1 <b>12.7</b>	93.6 70.9
leaving with inability to return home*	3.5 <b>11.9</b>	5.1 <b>7.5</b>	91.3 80.6
leaving on one's own accord*	2.2 <b>20.1</b>	4.2 <b>10.4</b>	93.6 69.4
hoarding things*	1.9 <b>17.9</b>	2.9 <b>6.7</b>	95.2 75.4
carelessness with fire	6.1 <b>9.7</b>	<b>9.9</b> 9.7	84.0 80.6
breaking things or tearing clothing*	0.3 <b>6.0</b>	1.0 <b>3.0</b>	98.7 91.0
unclean behavior*	0.3 <b>3.0</b>	0.6 <b>7.5</b>	99.0 89.6
allotriophagy*	0.0 <b>1.5</b>	1.6 <b>5.2</b>	98.4 93.3
sexually disturbed behavior	<b>1.0</b> 0.7	<b>0.3</b> 0.0	98.7 99.3

Upper line: Group II (n=312), Lower line: Group III (n=134), df=2, \*p<.01

Table 2 Comparisons of Capacity for Mutual Understanding of Purpose between Group II and Group III

items	df	(%)	
		possible	impossible
basic communication of intent*	3	<b>97.4</b> <b>79.9</b>	2.6 20.1
reaction to instructions*	2	<b>100.0</b> <b>97.8</b>	0.0 2.2
understanding daily routines*	1	37.8 10.4	<b>62.2</b> <b>89.6</b>
short-term memory*	1	46.8 11.2	<b>53.2</b> <b>88.8</b>
recognition of current season*	1	<b>67.0</b> 23.9	33.0 <b>76.1</b>
recognition of place*	1	<b>92.0</b> <b>61.9</b>	8.0 38.1

Upper line: Group II (n=312), Lower line: Group III (n=134), \* p<.01

Table 3 Relation of basic communication of intent (sec 6) to constant wandering (sec 7) in Group II (n=312)

(%)

sec 6		sec 7		constant wandering $\chi^2(6)=21.369, p=0.002$	
		Yes	No	Yes	No
basic communication of intent	possible	<b>9.9</b>	87.5		
	impossible	0.3	2.2		

Table 4 Relations of recognition of current season (sec 6) to lack of composure, and leaving with inability to return home (sec 7) in Group II (n=312)

(%)

sec 6			sec 7		lack of composure $\chi^2(2)=13.276, p=0.001$		leaving with inability to return home $\chi^2(2)=9.368, p=0.009$	
			Yes	No	Yes	No		
recognition of current season	possible		1.9	65.1	3.5	63.5		
	impossible		<b>4.5</b>	28.5	<b>5.1</b>	27.9		

Table 5 Relations of basic communication of intent (sec 6) to repetitive speech, carelessness with fire, and allotriophagy (sec 7) in Group III (n=134)

(%)

sec 6		sec 7		repetitive speech $\chi^2(6)=19.744, p=0.003$		carelessness with fire $\chi^2(6)=23.899, p=0.001$		allotriophagy $\chi^2(6)=23.955, p=0.001$	
		Yes	No	Yes	No	Yes	No		
basic communication of intent	possible	<b>52.2</b>	27.6	<b>15.7</b>	64.2	<b>6.0</b>	73.9		
	impossible	4.5	15.7	3.7	16.4	0.7	19.4		

Table 6 Relations of reaction to instructions (sec 6) to confabulation, leaving on one's own accord, carelessness with fire, and unclean behavior (sec 7) in Group III (n=134)

(%)

sec 6			sec 7		confabulation $\chi^2(4)=13.511, p=0.009$		leaving on one's own accord $\chi^2(4)=13.533, p=0.009$	
			Yes	No	Yes	No		
reaction to instructions	possible		<b>19.4</b>	78.4	<b>29.1</b>	68.7		
	impossible		0.7	1.5	1.5	0.7		
sec 6			sec 7		carelessness with fire $\chi^2(4)=22.360, p=0.000$		unclean behavior $\chi^2(4)=15.586, p=0.004$	
			Yes	No	Yes	No		
reaction to instructions	possible		<b>17.9</b>	79.9	<b>9.0</b>	88.8		
	impossible		1.5	0.7	1.5	0.7		

fire,” and “unclean behavior” (Table 6). The former finding suggests that many of the elderly in Group III who spoke repetitively, were careless with fire, or ate abnormally (allotriophagy) were able to communicate their intent. The latter suggests that some of the elderly who confabulated, left on their own accord, were careless with fire and behaved uncleanly were able to respond to instructions.

## Discussion

Psychological and behavioral disorders (so called problematic behaviors) of elderly people with dementia and the resulting increased burden on caregivers are the main reasons for sending the elderly to homes for the aged [9]-[13]. Therefore, it is important to consider these problematic behaviors in detail in accordance with the physical and mental state of the elderly.

In this study, the tendencies for problematic behaviors were compared between ambulant elderly people in two stages of dementia, Group II and III. There were significant differences in the prevalence of problematic behaviors between these two groups, with the proportion of problematic behaviors being higher in Group III than in Group II.

This finding suggests that in “ambulant” physical conditions, the rate of problematic behaviors increases as the degree of dementia becomes more severe. In particular, the rate of constant wandering increased remarkably in Group III, compared to Group II.

There were differences between Group II and Group III with regard to the relationship between the prevalence of problematic behavior and the capacity for mutual understanding of purpose.

Particularly in Group II, problematic behaviors such as “constant wandering,” “lack of composure,” and “leaving with inability to return home,” were related to the capability for basic communication of intent and the lack of recognition of current orientation. It is said that elderly people with dementia live with uneasy feelings [14]. If they are not able to fully understand their orientation, they may well feel uneasy and confused. Because a certain level of communication ability was maintained in cases where certain behavior was observed, such as not remaining still or trying to move around independently, it is possible that helping Group II-type elderly to understand time and place may reduce the misunderstanding of orientation and thereby reduce their feelings of uneasiness. It seems that greater composure can be gained by participating in activities to develop these communication skills [15].

In addition, for the 6 items measuring the capacity for mutual understanding of purpose, only the responses to “recognition of current season” differed from the other responses in such a way that Group II elderly showed more “possible” responses, while Group III elderly showed more “impossible” responses. This finding suggests that this ability deteriorates when dementia changes from Rank II to Rank III, indicating that this symptom could be an index that differentiates these two groups. For example, in Alzheimer patients, which is most prevalent dementia among people over 65 years of ages in Japan [16], [17], reality orientation usually deteriorates in the following order: “time,” “place,” and “person” [18]. This clinical feature in dementia was also observed in the current study. Thus, problematic behaviors such as “lack of composure” and “leaving with inability to return” were likely to occur when “recognition of current season” was “impossible.” Therefore, it could be concluded that when Group II elderly fail to recognize the current season, they are more likely to lose composure and they are very likely to move about on their own.

Group III elderly were different from Group II elderly. In Group III elderly of the current study, even if an individual is able to communicate intent or an individual is able to respond to instructions, the problematic behaviors that occur under these conditions may be due to a deterioration in the ability to recognize and/or make judgments. This relationship was observed in problematic behaviour such as

“repetitive speech,” “carelessness with fire,” “allotriophagy,” “confabulation,” “leaving on one’s own accord,” and/or “unclean behavior.”

Asada et al [1], in a study of behavioral disturbances among community-dwelling elderly with Alzheimer’s disease, have pointed out that better visual functions, poor speech and cognitive functions, as well as environmental factors, can be included in the factors contributing to behavioral disturbances. The findings of the current study suggest that for many of Group III-type elderly, the ability of basic communication of intent and reaction to instructions were maintained in spite of a deterioration in short-term memory and their ability to understand daily routines and reality orientation. Furthermore, prevalence of some problematic behaviors was related to those abilities. It is observed that elderly with dementia are active, but often in inadequate ways; for example, they incline to kill time, sometimes just like to express something or to work. In the current study, eyesight and audibility of all participants were functioning to a satisfactory level. Group III-type elderly found it easy to comprehend information if they are asked simple questions and are approached with methods that are easy for them to understand visually and auditorily as opposed to attempting complex communication. Furthermore, it is necessary to frequently draw their attention to caregivers.

It is said that the prevalence of problematic behaviors differs for differing types of dementia [19]. In the current study, however, the type of dementia was not confirmed. So the relationships between the differing characteristics of problematic behaviors by differing type of dementia were not clearly identified. Therefore, it is necessary to further examine the relation between problematic behaviors and types of dementia.

## Conclusion

In the current study, the proportion of problematic behaviors was higher among elderly people with moderate dementia than in those with mild dementia. Furthermore, the problematic behaviors related to the capability for mutual understanding of purpose were different depending on the degree of dementia. The tendencies and factors of problematic behaviors observed in everyday situations of care were confirmed by a large quantity of data regarding both physical and mental states of the elderly. To effectively support the elderly with dementia, it is important to develop and apply support systems that can adequately reduce daily difficulties caused by problematic behaviors based on these results.

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## Footnotes

#1 “Problematic Behavior”, a terminology presently employed as a secondary symptom of dementia, is used in this study instead of “Behavioral and Psychological Symptoms of Dementia (BPSD)”, following the format used in the questionnaire of long-term care insurance.

#2 In the long-term care insurance system in Japan, the levels of independence in daily living are divided concretely into four levels, “J, A, B, and C” by the criterion “Degree of Independence in Daily Living for Elderly with Disabilities”. The categories of level “J” and “A” are defined as the state of being able to walk by themselves. “B” and “C” indicate dependence on care for daily living, including bedridden individuals. The states of dementia are evaluated by the criterion “Degree of Independence in Daily Living for Elderly with Dementia.” This criterion is composed of five categories (Rank I–IV and M). Rank “I” indicates a very mild state of dementia and near independence in daily life. Rank “II” and “III” indicate mild and moderate states of dementia. Rank “IV” indicates a state requiring constant nursing care, compared with the elderly of Rank “III”. Finally, Rank “M” indicates the emergence of

severe psychological symptoms, problematic behaviors and severe physical disorders.

- #3 Nineteen items listed as problematic behaviors were as follows: victimization, confabulation, visual or auditory hallucinations, emotional instability, reversal of day and night, violent language and action, repetitive speech, talking loudly, resistance to care, constant wandering, lack of composure, leaving with inability to return home, leaving on one's own accord, hoarding things, carelessness with fire, breaking things and tearing clothing, unclean behavior, allotriophagy, and sexually disturbed behavior.
- #4 Six items used in this analysis listed as capacity for mutual understanding of purpose were follows: "basic communication of intent" (evaluated using a four-point response scale: *possible, often possible, sometimes possible, and impossible.*) "reaction to instructions" (evaluated using a three-point response scale: *possible, sometimes possible, and impossible.*) "understanding daily routines," "short-term memory," "recognition of current season," and "recognition of place" (evaluated with a two-point response scale: *possible and impossible*).