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**Original**

# Calculating the weight of importance on ADL

## —— A study of four outpatients ——

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**Abstract**

This study investigated the weight of importance placed on various aspects of Activities of Daily Living (ADL) using the method of paired comparisons among 4 outpatients. The result showing the existence of people who placed more weight on dependent activities than on independent activities as well as those who placed more weight on independent activities than on dependent activities, suggesting that there was a variety among the patients in the aspects of ADL that were most highly valued. On retrial, modification of the questions and reselection of valid subjects were also suggested by the low consistency of the answers.

**Key words**: activities of daily living, weight of importance, method of paired comparison

## Introduction

A sense of the value placed by patients on various aspects of ADL is an important factor in order not only to assess the ADL capability but also to provide ADL training. Knowing the most important activity for a patient within the variety of ADL activities, the order and weight of importance for each activity is thought to be necessary to improve understanding of the patient's sense of value on ADL. This information could lead us to provide a better training program that meets the individual patient's sense of value. In the literature, a sense of value regarding ADL has been investigated by Nagao and Himeno (1982), and Bishu and colleagues (1991, 1993). They had compared values placed on ADL and Instrumental Activities of Daily Living (IADL) using the method of paired comparison among healthy and handicapped people and ranked the activities in the order of values. Furthermore within the study conducted by Nagao and Himeno (1982) the weight of importance placed on ADL was calculated using distances between each ADL activity on a scale among healthy people. However, none of these studies clarified the weight of importance placed on ADL by individual subjects. In this study, we calculated and examined the weight of importance placed on ADL by individual subjects. We also investigated problems in calculating the weight of importance, the relationship between the weight of importance and status of ADL, and the significance of calculating the weight of importance placed on ADL.

## Subjects

The subjects were 4 people between 60–65 years of age (average age: 62 years old) who were consulting T Hospital as outpatients. Of these four subjects, three people had histories of cerebrovascular accident (CVA) (2 males, 1 female) and one person had rheumatoid arthritis (RA). They were all capable of verbal communication. Informed consent was obtained from each subject before participating in the study. It was also explained that

participation in the study could be cancelled at any time.

## Methods

Basic information of participants (age, sex, diagnosis, date of onset, and status of ADL) were obtained by interviews and from their medical records (Table 1).

Interviews were conducted with questions comprising of 5 categories (eating, grooming, dressing, toileting, and bathing). Responses were obtained using paired comparisons, which ask participants to choose more important activities in order to calculate the weight of importance for each activity (Table 2).

The responses were ranked in 4 grades: "slightly important", "important", "very important", or ""importance of A and B are almost the same". The Eigenvalue method in Analytic Hierarchy Process (AHP) (Saaty, 1977) was used to calculate the sense of the value. The grades of the value were converted to the numbers: "slightly important" for 3 points, "important" for 6 points, "very important" for 9 points, and "importance of A and B are almost the same" 1 point. The consistency Index (CI) was calculated at the same time.

## Results

Table 3 shows the weight of importance placed on ADL by 4 subjects and the CI.

The score of dressing was higher than that for other activities for subject 1. The score for toileting was higher for subjects 2 and 3. For subject 4, the score for bathing was higher than the scores for other activities. For subject 1, scores for eating, grooming, and bathing were lower than those for other activities. For subjects 2, scores for grooming, dressing, and bathing were lower. Subject 3 indicated lower scores for eating, grooming, and dressing. Subject 4 indicated lower scores for eating, grooming, and dressing. CI values among subjects 1, 2, 4 were over 0.15. Among those subjects consistency of the answer was low and confidence in the weight of importance was low (Nakajima, 1997).

## Discussions

### 1. Problems in calculating ADL values

The problem in calculating the weight of importance in this study was that the resulting CI value was high. In general, CI is an index that judges the consistency of the method of paired comparison and confidence in the result is low if the CI value is over 0.15 (Nakajima, 1997). The finding that subjects 1,

Table 1 Basic information of the participants

| | Age | Sex | Diagnosis | Date of onset | Status of ADL |
|---|---|---|---|---|---|
| 1 | 62 | male | CVA | 2 years ago | Full Independent |
| 2 | 60 | male | RA | 20 years ago | Partial assistance in toileting |
| 3 | 65 | female | CVA | 2.5 years ago | Full assistance in dressing and bathing |
| 4 | 61 | male | CVA | 8 years ago | Partial assistance in bathing |

Table 2 Content of a representative question (a part of the question)

Please indicate which is more important and how much important to you?
1. Which is more important to you: Eating or grooming?
A: Eat by yourself.
B: Washing face, brushing teeth, and grooming your hair by yourself.
*(A, B) is "slightly important", "important", "very important", or "importance of A and B are almost the same".

Table 3 The weight of importance on each ADL and CI value

| Category | Subject 1 | Subject 2 | Subject 3 | Subject 4 |
|---|---|---|---|---|
| Eating | 0.103 | 0.277 | 0.180 | 0.080 |
| Grooming | 0.115 | 0.105 | 0.152 | 0.079 |
| Dressing | 0.427 | 0.063 | 0.135 | 0.084 |
| Toileting | 0.233 | 0.531 | 0.300 | 0.167 |
| Bathing | 0.122 | 0.024 | 0.234 | 0.591 |
| CI value | 0.320 | 0.471 | 0.142 | 0.241 |

2, and 4 showed CI values as high as 0.320, 0.471, and 0.241, respectively, showed a contradiction from the theory. One of the reasons for this result may have been due to difficulty in understanding the meaning of the questions for some subjects. Solutions to this problem are 1) retrial of subjects who answered with low consistency; 2) modifying the contents of the questions; and 3) recruiting subjects who are capable of answering with consistency. It was suggested that the order of questions should be changed in order to obtain less contradiction in the results. The question "Which activities would give you more difficulty?" used by Nagao and Himeno (1983), and by Bishu and colleagues (1991, 1993) may be better rather than "Which activity is more important to you?", which asks about the importance of the activity directly. The four grades used to categorized answers need to be discussed to determine whether those answers reflect differences in the importance of the activity. The conversion of the answers to numbers also needs to be considered.

**2. The relationship between sense of value on ADL and status of ADL**

From these results, independent activity was considered more important as subject 3 placed more value on toileting than on dressing and bathing. However, subject 4 placed more value on bathing, which required a partial help. In subject 4, the confidence expressed by the CI was low since the CI value was slightly elevated (0.241). However, the high weight placed on bathing (3.54–7.48 times higher than other activities) suggested the higher importance compared to other activities. Those results showed that there were two types of patients: those who regard dependent activities as important and those who regard independent activities as important. It means that there is variety among individuals in the sense of value placed on the ADL activities.

**3. Significance of calculating the weight of importance on ADL**

Calculating the weight of importance placed on ADL by individual patients may help to understand their needs and share their sense of values with people around them. It could also avoid forcing the values of professionals and family members on the patients. By expressing importance objectively, patients can affirm the value they placed on ADL and make more appropriate decisions. Better decision making by patients could lead to conducting better training programs that meet the patient's values.

## Conclusion

The weight of importance placed on ADL was calculated for four outpatients. The result showed a variety in the sense of value placed on ADL by these patients. The low consistency of answers suggested that retrial, reconsideration of the questions, and reselection of the subjects would be warranted.

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