

## ■ ORIGINAL ARTICLE

# ADL ability required of home care patients- Evaluation based on the Barthel Index -

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**ABSTRACT:** To determine the ADL (activities of daily living) ability level necessary for patients to live at home while receiving nursing care, we examined and compared BI (Barthel Index) scores achieved by patients who were discharged for home care and transferred to nursing care facilities after undergoing rehabilitation. Subjects were 192 patients who took the BI test at the time of discharge. We conducted an unpaired t-test to compare total and specific BI scores between the two (home-care and care-facility) groups. Using BI scores as the observed frequency and the BI phase as the expected frequency, we conducted a chi-square goodness of fit test. Total and specific BI scores in the home-care group were markedly higher than those in the care-facility group. The results of the chi-square goodness of fit test suggested the minimum level of ADL ability required to be discharged for home care: being able to eat and drink (including special food) through the mouth using supportive devices if necessary, use a toilet independently (contenance included), walk (up/down the stairs) with support from someone if necessary, and transfer to a wheelchair and operate it by oneself.

**Key words:** ADL, home care patients, Barthel Index

## INTRODUCTION

In April 2006, the systems of remuneration for medical and nursing care services were revised, placing rehabilitation practice in a difficult situation: introduction of calculation methods imposing a limitation on the period for acute and convalescent rehabilitation, exclusion of rehabilitation for patients using “beds for medical care”, and abolition of “beds for long-term care” by the

year 2012. In light of these trends, it is clear that nursing care facilities and home care will be gradually taking over the role of providing rehabilitation. Under these circumstances, patients will be required to be able to perform at least daily activities prior to being discharged for home care and continued rehabilitation. Patients should not be forced to be discharged before they have achieved a certain level of ability to support themselves. Therefore, what level of ADL (activities of daily

living) ability will be required of patients? In a study involving cerebral infarction patients aged 85 years or older, Hosaka et al.<sup>1)</sup> reported that BI (Barthel Index) scores were more reliable in determining such ability than evaluation based on Brunnstrom stages. Applying this to our study, we examined and compared BI scores achieved by patients who were discharged for home care and transferred to nursing care facilities to determine the minimum level of ADL ability necessary to live at home while receiving care.

## SUBJECTS

Subjects were 192 patients aged 65 years or older who underwent rehabilitation in our hospital between August 2003 and November 2005, excluding those who died or transferred to another hospital. We categorized the subjects into two groups: patients who were discharged for home care, and those transferred to care facilities, such as healthcare and welfare facilities for the elderly, (Table 1). There were 113 (60.1%) orthopedic patients, including those with fractures and osteoarthritis, 37 (19.7%) with central neurological disorders, such as cerebral infarction and Parkinson's disease, and 36 (20.2%) with respiratory and cardiovascular diseases as well as associated disuse syndrome.

## METHODS

Subjects were 192 patients who took the BI test at the time of discharge. We conducted an unpaired t-test to compare total and specific BI scores between the two (home-care and care-facility) groups. Using BI scores as the observed frequency and the BI phase as the expected frequency, we conducted chi-square goodness of fit tests. The test was designed to calculate representative scores for each item in the two groups, and identify items for which there were differences. This study was conducted with the approval of the ethics committee of Shibata Hospital, after obtaining consent from the subjects.

## RESULTS

Both total and specific BI scores in the home-care group were markedly higher than those in the care-facility group ( $p < 0.0001$  for all items). "Table 2" shows the results of the chi-square goodness of fit test, which was conducted using BI scores as the observed frequency and the BI phase as the expected frequency: there were differences in BI scores between the two groups regarding feeding, toilet use, bladder, bowels, transfer, and stairs.

Table 1 Subjects

		Male	Female	Total
Subjects	Number of patients	66	126	192
	Number of patients/Total (%)	34.4	65.6	100.0
Home-care group	Number of patients	59	101	160
	Number of patients/Total (%)	30.7	52.6	83.3
	Number of patients/Group total (%)	37.1	62.9	100.0

Table 2 Mean BI scores in the two groups and BI phase of fitness

Index	Home-care group		Care-facility group	
	Mean BI score	BI phase of fitness	Mean BI score	BI phase of fitness
Feeding	9.0±2.1	10	7.0±3.6	5
Bathing	1.9±2.4	0	0.0±0.0	0
Grooming	3.2±2.4	0	0.9±2.0	0
Dressing	7.2±4.0	5	3.8±4.6	5
Toilet use	8.2±3.4	10	5.3±4.7	0
Bladder	8.4±3.2	10	5.6±4.7	5
Bowels	8.4±3.2	10	4.7±4.0	5
Transfers	13.7±2.5	15	10.3±5.4	10
Mobility	12.9±3.7	10	9.1±5.6	10
Stairs	5.7±4.5	5	3.3±4.1	0
Total	78.7±25.0	75	50.0±31.0	40

## DISCUSSION

According to the results of the chi-square goodness of fit test, the minimum level of ADL ability required of patients to live at home while receiving care was as follows: being able to eat and drink (including special food) through the mouth using supportive devices if necessary, use a toilet independently (continence included), walk (up/down stairs) with support from someone if necessary, and transfer to a wheelchair and operate it by oneself. However, this does not seem to necessarily represent the minimum level of ability required of patients to live an independent life. The conditions for accepting a patient imposed by caregivers are implied here.

If a patient is able to eat and drink by

himself/herself while the caregiver is having a meal, it will substantially reduce the time for preparing meals and washing dishes. Caregivers place importance on patients' ability to use the toilet without support (and continence) because they are afraid that their sleep will be frequently interrupted at night, in addition to a burdensome task following patients' incontinence. On the other hand, patients are allowed to be discharged even if they need support when walking (up/down stairs) – an activity requiring a relatively low level of self-reliance. Caregivers would not mind assisting patients in these cases, probably because they have to keep an eye on patients performing such an activity anyway. For a similar reason, patients are encouraged to improve their ability to transfer to a wheelchair

and operate it by themselves; once they have acquired this skill, caregivers do not have to worry about them falling.

Whereas patients and therapists want to improve the ADL as much as possible, caregivers tend to focus on how to support patients using less effort. If caregivers are willing to invest time and effort, patients with a lower level of ADL ability would be able to receive nursing care at home. On the other hand, patients will have to wait until they have achieved a higher level of ADL ability when their families and caregivers cannot provide quality care. As there are now good bathing services available, saving time and effort for caregivers, an increasing number of patients are discharged even when they require full bathing assistance.

Since it takes time for patients to restore their ability to walk on their own, more focus should be placed on the development of the living environment and supportive devices, which will help patients perform daily activities such as transferring to a wheelchair. The results of the present study demonstrated that quality nursing care provided by caregivers and family members is also an important factor contributing to the early discharge of patients. According to a report by Kuwahara et al.,<sup>2)</sup> caregivers hope that more short-stay and helper-based services will become available on a regular basis. Since the burden of providing care may adversely affect

the condition of elderly caregivers themselves,<sup>3)</sup> it is also necessary to help them reduce their mental stress.<sup>4,5)</sup>

Needless to say, ADL improvement is essential. However, to conduct rehabilitation sessions designed to promote early discharge, it is important to take into consideration the workload and ability of caregivers and family members, as well as the living environment of individual patients.

## REFERENCES

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