In Korea, the incidence of dementia among elderly people aged 65 or above is estimated at 9.6% (approximately 610,000 people) and is projected to continue to increase with 15.05% (approximately 2,710,000 people) in 2050(1). Moreover, medical expenses per person for dementia in 2014 amounted to 11.67 million won(2).

Dementia is defined as follows: 1) the existence of at least one cognitive disorder in addition to memory disorder following an acquired brain disease; 2) In the absence of memory disorder, a condition in which three or more cognitive disorders among disorders in the executive functions of the frontal lobes, including speech disorder, visuospatial disorder, changes in personality and emotion, and judgement, cause difficulties in daily activities and social life(3). Dementia is one of the most serious diseases in terms of making the life of old age inert by causing the continuous and extensive deterioration of cognitive functions(4). For the elderly, an older age and a larger number of chronic diseases lead to corresponding higher levels of dependence in ADL and instrumental activities of daily living(IADL)(5). While women feel an overall higher level of discomfort in ADL, men are also reported to feel discomfort(6,7).

While men showed a relatively lower frequency of urinary incontinence than women, they also exhibit increases in the frequency of urinary incontinence with aging(8). In particular, elderly people who live in nursing facilities show increases in the incidence of urinary incontinence when they are older, have cognitive disorders, or have lower levels of ADL and larger numbers of associated diseases(9,10). Elderly patients are generally hospitalized in long-term care hospitals due to cerebrovascular disorders, old age, and dementia,
and around 51.8% of patients in long-term care hospitals are reported to show urinary incontinence(11).

A study reported that the incidence of bowel incontinence increases with aging(12), and among elderly people aged 75 or above, urinary and bowel incontinence have correlations with dementia and low scores in ADL(12). Elderly people in nursing homes frequently show urinary and bowel incontinence, and disorders in ADL are reported to have a higher correlation with dementia than age(13). In particular, when elderly people with dementia have both urinary and bowel incontinence, they are more likely to show disorders in ADL(14).

Most previous studies attempted to analyze correlations between the cognitive function and ADL of elderly people with dementia, and improve them(15,16). However, only a limited number of studies have so far examined correlations among the continence function, cognitive function, and ADL of hospitalized elderly men with dementia in domestic geriatric hospitals. In addition, the continence function has mostly been evaluated using tools for the evaluation of ADL, such as the Modified Barthel Index(MBI) and the Functional Independence Measure(FIM). In these evaluation methods, bowel and bladder control are assessed in terms of managing urine and feces rather than the continence function. Therefore, this study intended to provide basic data for the efficient management and treatment of male dementia patients by researching correlations among the continence function, cognitive function, ADL of male dementia patients who were hospitalized in a geriatric hospital.

### METHODS

#### Subjects

The subjects were selected from the male patients who were hospitalized between January 1, 2012 and September 30, 2013 in a geriatric hospital in Yongin City, Gyeonggi-do. They were 64 patients aged 65 or above who had been diagnosed with dementia based on their medical records and assessed using the "patient evaluation table" produced based on the medical records to evaluate these patients. The exclusion criteria were as follows: those who were in a coma, had diplegia, complete visual impairment, or femoral fractures, or required "full support" in all items of ADL. The general characteristics of the subjects are presented in (Table 1).

<table>
<thead>
<tr>
<th>Subjects(n)</th>
<th>Age(yr)</th>
<th>MMSE(score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>81.34±6.55</td>
<td>13.59±7.65</td>
</tr>
</tbody>
</table>

#### Procedures

**Data collection**

For data collection, the patient evaluation table was used, which is generally produced by nurses in charge of patients in long-term care hospitals. The patient evaluation table used in this study was produced through a comprehensive evaluation of the patients’ conditions for the recent seven days between the 1st and 10th of each month.

**Cognitive function test**

The cognitive function of the patients was measured using the questionnaire developed by Kang et al.(18) for the Korean Mini Mental State Examination(K-MMSE) based on the Mini Mental State Examination(MMSE) developed by Folstein et al.(17). The K-MMSE is an evaluation tool with a high level of reliability(19).

**ADL Test**

The ADL were evaluated by examining the following ten items based on the "patient evaluation table": dressing, washing, brushing teeth, bathing, eating, changing posture, standing up and sitting, moving and sitting, getting out, and toileting. A study reported that the evaluation domain of ADL in the patient evaluation table and the K-MBI have a substantially high correlation with a correlation coefficient of .96(20). The ADL were evaluated based on zero point for "complete independence", one point for "requiring supervision", two points for "requiring minor support", three points for "requiring substantial support", four points for "requiring full support", and five points for "no occurrence of activities".

**Continence function test**

The continence function was evaluated by examining the existence of any incontinence that occurred regardless of its cause and the degree of the incontinence based on the "patient evaluation table". For the continence function, the weighted kappa coefficients for bowel control and bladder...