

# Comprehensive activities of daily living profile of individuals with dementia living in nursing home

## Abstract

**Objective:** In this study, it was aimed to comprehensively determine the activities of daily living of elderly people with and without dementia living in nursing homes.

**Materials and methods:** The cognitive status of the individuals participating in the study was evaluated with the trained and Untrained Mini Mental Test (MMT). Participants' Mini Mental Test total scores were divided into 3 groups as 24-28 normal, 18-23 mild dementia, and 8-17 dementia. Activities of Daily Living was evaluated with the Katz Daily Living Scale (Katz), Lawton and Brody Instrumental Activity of Daily Living Scale (EADL).

**Results:** 106 people, 48 (45.3%) female and 58 (54.7%) male, participated in the study. It was determined that the mean age of the participants was  $76.86 \pm 8.37$  years, and the mean BMI was  $27.47 \pm 5.36$  kg/m<sup>2</sup>. According to MMT; The normal group consists of 31 (29.2%), the mild dementia group consists of 43 (40.6%) and the dementia group consists of 32 (30.2%). The mean Katz score of the normal group was  $17.74 \pm 0.68$ , the mean Katz score of the mild dementia group was  $17.46 \pm 1.42$ , and the mean Katz score of the dementia group was  $16.43 \pm 2.16$ . Katz bath activity, continence activity; It showed a statistically significant difference between MMT groups ( $P < 0.05$ ). The mean EADL test score was  $19.03 \pm 5.061$  in the normal group,  $19.53 \pm 4.65$  in the mild dementia group, and  $15.21 \pm 5.66$  in the dementia group. EGYA total scores; There was a statistically significant difference between MMT groups ( $P < 0.05$ ). EGYA phone, cooking, housework, laundry, travel, medicine parameters; There was a statistically significant difference between MMT groups ( $p < 0.05$ ).

**Conclusion:** As MMT values of elderly individuals staying in nursing homes decrease; basic and instrumental activities of daily living are also affected.

**Keywords:** nursing home, dementia, activity of daily living, mini mental test

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## Introduction

With the aging of the population, its demands have been a major public health concern.<sup>1</sup> Around 47 million people worldwide have dementia, and this number is expected to rise to 131 million by 2050.<sup>2,3</sup> Aging has been the strongest risk factor for dementia, with more than 90% of dementias occurring after age 65.<sup>4</sup> The incidence and prevalence of dementia continue to increase steadily worldwide with increasing average age.<sup>4</sup> Dementia is a complex process that affects cellular functions, leading to loss of synaptic connections, cell death, gliosis, inflammation, and disruption of the functional networks underlying cognition, personality, behavior, and sensorimotor functions.<sup>4</sup> Dementia is a progressive decline syndrome that causes a decline in mental abilities and leads to deterioration in cognitive, functional, social and occupational functioning.<sup>5</sup> Dementia represents the main cause of disability in the elderly.<sup>2</sup> Functional disability is a defining feature of dementia.<sup>5</sup> Dementia is characterized by a decline from the previously attained cognitive level, which in dementia affects activities of daily living or social functioning.<sup>6</sup> Health and social challenges affect diagnosis, prognosis, response to treatment, and need for health and social care.<sup>6</sup> Activities of Daily Living (ADL) are important determinants of quality of life and are evaluated by clinicians to compare patients' physical and cognitive abilities, identify care needs, identify risks in daily life, and monitor disease progression or the impact of anti-dementia treatment.<sup>7</sup> Activities of Daily Living are "activities that are necessary for an individual to function independently in daily life".<sup>8</sup>

In dementia, functional impairment is associated with two main types of abilities: basic activities of daily living (BADL) and

instrumental activities of daily living (IADL).<sup>7</sup> BADL are physical tasks required to maintain one's independence and include the ability to go to the toilet, feed, dress, groom, bathe, and walk. IADL is typically more cognitively demanding than BADL and successfully uses the phone, shopping, preparing meals, cleaning the house, doing laundry, managing medication and finances, and using transportation outside the home (e.g., car, public transport or taxi. includes riding). In the early stage of dementia, most people are independent of BADL, but with some IADLs they begin to need help, especially with complex tasks that require multiple steps or extensive planning.<sup>9</sup> In order to live safely and independently at home, a person needs to perform BADL and IADL reliably and independently. While both are important for safe and independent living, proficiency in IADL is a necessary criterion for independent living in society.<sup>7</sup> Typically, ADLs are concentrated in six key ADLs: bathing, feeding, toilet, transfer, mobility, and continence. However, there are inconsistencies regarding the activities that should be included, particularly for individuals living independently in a community setting. More complex instrumental ADLs such as money and medication management, household chores, and using the phone are equally important. However, it was determined that IADL was either not included in performance-based tests or was only evaluated superficially.<sup>8</sup> Information on ADL can increase the specificity and sensitivity of dementia diagnosis. Evaluation of IADL can provide crucial guidance in the clinical diagnosis of early-stage dementia. Certain IADL items (such as phone use, use of transportation, medication management, financial management) can also be used to screen for very early dementia. Linking dementia to dysfunction is often an effective way to get the patient and family to accept treatment.<sup>5</sup>

In assessing the needs of a person with dementia, the individual's social and physical living environment should also be considered.<sup>6</sup> It is known that one-third to two-thirds of elderly people with dementia live in nursing homes.<sup>10</sup> People with dementia living in a nursing home show a significantly lower quality of life compared to elderly people with dementia living at home. This may be the result of poorer physical function and dependence on activities of daily living in nursing home residents with dementia.<sup>10</sup> Considering the importance of the social environment in determining the needs of elderly people with dementia living in nursing homes, it is important to evaluate their ADLs to determine their needs. When the literature is examined, there are not enough studies examining basic ADLs and instrumental ADLs, especially in elderly people with dementia living in nursing homes. In this study, it was aimed to determine the daily living activities of elderly people with and without dementia living in nursing homes.

## Materials and methods

The sample of the study consisted of individuals over 60 years old and living in nursing homes. The elderly living in a nursing home, over 60 years old and able to communicate verbally, were included. Individuals under the age of 60, who have a physical disability that prevents them from performing the paper-pencil tests, and the elderly who cannot cooperate were excluded from the evaluation. According to these criteria, 106 people, in three groups (normal, mild dementia, dementia), participated in the study. Variables such as age, gender, duration of education, length of stay in nursing home, Body Mass Index (BMI) of the individuals participating in the study were evaluated with the Socio-Demographic Form. The cognitive status of the participants was evaluated with the Trained and Untrained Mini Mental Test (MMT). The Mini Mental Test was developed by Folstein et al.<sup>11</sup> It is used as a tool to assess the cognitive impairment of the elderly with delirium and/or dementia. Güngen et al. It has been adapted into Turkish by the research team and its validity and reliability have been tested.<sup>12</sup> Participants were divided into 3 groups according to their Mini Mental Test total scores, 24-28 normal, 18-23 mild dementia, 8-17 dementia.

Activities of Daily Living of participants evaluated with the Katz Daily Living Scale (Katz), Lawton and Brody Instrumental Activity of Daily Living Scale (EADL). Katz ADL Scale; In 1963, Katz et al. Daily Living Activities Index was developed by (Katz, T.F. 1963) In six subsections; the patient's ability to independently perform functions related to bathing, dressing, toilet, transfer, continence, and feeding is evaluated. The level of dependency/independence in ADL is determined by assessing the patient's ability to perform each function independently or with assistance. Ozkan Pehlivanoglu et al. has been adapted into Turkish by and its validity and reliability have been tested.<sup>13</sup> EADL was developed by Lawton and Brody in 1969 (M. Powell Lawton, 1969). Scale includes activities such as using the phone, using transportation, shopping, preparing meals, doing daily household chores, doing laundry, recognizing and using medicines, and managing money. It is scored according to the level of dependency in the activities (0=independent, 1=some help, 2=fully dependent). In the EGYA scale, 0-8 points are evaluated as dependent, 9-16 points as semi-dependent, and 17-24 points as independent.<sup>14</sup> It was adapted into Turkish by Yardımcı.<sup>15</sup>

## Ethical aspect of research

Ethics Committee approval was obtained for the study from the Non-Interventional Clinical Research Ethics Committee with the number 2019/04.

## Statistical analysis

The data of the study were analyzed using SPSS 22.0 package program. The descriptive features of the data were determined using number, percentage, mean and standard deviation. Pearson chi-square test, Kruskal Wallis test and Post hoc Tamhane's T2 test were used in the analysis of the data. Statistical significance level was determined as  $P < 0.05$ .

## Results

A total of 106 people, 48 (45.3%) women and 58 (54.7%) men, participated in the study. It was determined that the mean age of the participants was  $76.86 \pm 8.37$  years, and the mean BMI was  $27.47 \pm 5.36$  kg/m<sup>2</sup>. 52 (49.1%) of the participants were illiterate, 48 (45.3%) had 1-8 years of education, 6 (5.7%) had 8-12 years of education. According to MMT; The normal group consists of 31 (29.2%), the mild dementia group consists of 43 (40.6%) and the dementia group consists of 32 (30.2%). Of the normal group, 11 (35.5%) were female and 20 (64.5%) were male; In the mild dementia group, 18 (41.9%) women and 25 (58.1%) men; 19 (59.4%) of the dementia group were female and 13 (40.6%) were male. The mean age of the normal group was  $73.51 \pm 7.89$  years, the mean age of the mild dementia group was  $77.16 \pm 8.63$  years, and the mean age of the dementia group was  $79.71 \pm 7.53$  years (Table 1). The mean Katz score of the normal group was  $17.74 \pm 0.68$ , the mean Katz score of the mild dementia group was  $16.43 \pm 2.16$ . Katz bath activity showed statistically significant difference between continence activity and MMT groups ( $P < 0.05$ ). EGYA test score average; The mean score of the normal group was  $19.03 \pm 5.06$ , the mean score of the mild dementia group was  $19.53 \pm 4.65$ , the mean score of the dementia group was  $15.21 \pm 5.66$ . EADL total score differed statistically between MMT groups ( $P < 0.05$ ). EADL phone, cooking, housework, laundry, travel, medicine parameters; There was a statistically significant difference between MMT groups (Table 2). It was found that there was a statistically significant difference between dementia groups in terms of Katz total score and EADL total scores ( $p = 0.001$ ;  $p = 0.002$ ) Katz total score only; There was a statistically significant difference between the Normal and Dementia groups ( $p < 0.05$ ). EADL total score; Dementia and Mild dementia; There was a statistically significant difference between the Dementia and Normal groups ( $p < 0.05$ ). The difference between mild dementia and Normal group was not statistically significant ( $p > 0.05$ ) (Table 3).

## Discussion

In this study, it was aimed to comprehensively determine and compare the activities of daily living of the elderly with and without dementia living in nursing homes. According to the findings, Katz found that bathing activity and continence activity, which are among the daily living activities, were significantly different between dementia groups; Among instrumental daily life activities, telephone, cooking, housework, laundry, travel, medication management activities were found to be statistically significantly different between dementia groups. The aging process is characterized by a gradual loss of physical and cognitive abilities; therefore, maintaining functional independence over time has been and continues to be one of the most important goals by healthcare organizations.<sup>8</sup> The first priority of dementia, which has been found to affect quality of life, is daily functionality.<sup>16</sup> Functional disability is a defining feature of all dementias, including Alzheimer's.<sup>5</sup> From the earliest stages of dementia, it has been found that people have difficulty in performing complex instrumental ADLs such as using the phone and maintaining

basic ADLs such as continence.<sup>16</sup> While basic ADLs are learned early in life and are relatively more preserved in reduced cognitive function compared to more complex tasks, difficulty performing EADLs can often occur in mild cognitive impairment and early dementia.<sup>17,18</sup>

Cognitive-motor performance disorders were found to be more prominent in partial dependence on EADLs rather than cognitive or motor tests.<sup>19</sup> Mao et al. (2018) showed that the EADL scale can screen older adults for dementia in low-income countries with a sensitivity of 0.89, an accuracy of 0.82, and an area under the curve of 0.92. Therefore, if we consider the intervention of low education in cognitive assessment, especially in low and middle income countries, the assessment of EADL is very important for detecting dementia. Our findings are consistent with previous research examining ADLs in this population. Carpenter et al.<sup>20</sup> in his study; In those with moderate cognitive impairment, the mean ADL score was 14.77 at baseline, and 19.01 for those with severe cognitive impairment. In those with both moderate and severe cognitive impairment; It was determined that the least amount of help was needed in the eating activity, and the highest level of help was needed in the dressing activity. In this study, the basic ADL score of the elderly without dementia was 17.74, and 16.43 in those with dementia; It was found that the instrumental ADL score of the elderly without dementia was 19.03, and 15.21 in those with dementia. The highest rate (90.6%) of the elderly with dementia in nutritional activity was unaided; however, it was concluded that the lowest rate of bathing activities (53.1%) of BADLs were performed unaided, while the lowest rate of food preparation activities (18.8%) of BADLs was performed unaided. Giebel et al.<sup>21</sup> found that while dementia patients were significantly weaker in cleaning, repairing, and preparing meals at the beginning, their activities of dressing and following current events were weaker in the follow-up. More basic activities such as dressing, washing, brushing hair or teeth, and preparing hot drinks were most preserved, while using computers, preparing hot meals, finances, and medication management were the most impaired.<sup>21</sup>

Arrighi et al.<sup>22</sup> showed that, over a two-year period, a 1-point change in the MMSE resulted in a 3-point change in the Disability for Assessment Dementia (DAD) in participants with Alzheimer's; It has also been observed that DAD elements in Finance, Pharmaceuticals and ambulation subfields are affected earlier and Instrumental ADL is generally affected before basic ADL.<sup>22</sup> In this study, it was found that less of the basic ADLs could do the bathing activity unaided compared to the other ADLs, and less of the dementias could do housework and laundry activities from the EADLs without assistance. Lechowski et al. (2010) described the loss pattern of 6 BADLs of the Lawton scale in community-dwelling Alzheimer's patients. In women; Loss of ability to first leave the house, then care, bathe, dress, go to the toilet and finally eat; found that the model was similar to women, except that dressing was second.<sup>23</sup> Helvik et al.<sup>24</sup> found that the degree of dementia at baseline and course of dementia during follow-up were significantly associated with low personal ADL in a follow-up study of 932 people with dementia living in nursing homes. A decline in personal ADL function was found over time. Individuals with suspected dementia may overestimate functional abilities, so it is important to consider information provided by family members when diagnosing cases in the early stages of the disease. Reports of caregivers and especially family members on EADL have been found useful for the diagnosis of dementia.<sup>25</sup>

Limitations of the study; activities of daily living were primarily determined using scales, therefore, in determining the ADL level, the elderly individual may have an incorrect estimation and recall bias. In future studies, the ADL challenges of elderly people with dementia

living in nursing homes can be investigated with new technologies. Studies with larger sample numbers in the dementia population living in a nursing home will be important in terms of findings. Dementia is a complex process as it can occur with many problems. Therefore, a comprehensive assessment of patients with dementia is important for early diagnosis, determination of needs, effective use of health and social support services, and effective planning. Considering that the average life expectancy is increasing, the health, social and economic needs due to dementia will increase. Early diagnosis and intervention of dementia will ease the burden of the patient and caregiver. In line with the findings of this study, it can be expected to provide guidance in terms of planning needs, protecting and increasing their quality of life, by comprehensively revealing the ADL status of dementia patients living in nursing homes.<sup>26-28</sup>

## Conclusion

According to the findings obtained; basic and instrumental activities of daily living of individuals with dementia staying in nursing homes are more affected than elderly people without dementia. Especially instrumental ADLs were found to be more affected. In basic ADL, between normal and dementia groups, in instrumental ADLs; It was determined that there was a significant difference between normal and dementia, mild dementia and dementia groups.

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## Conflicts of interest

The author declares there is no conflict of interest.

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