

COGNITIVE IMPAIRMENT AND ACTIVITY DAILY LIVING IN THE ELDERLY

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Article Info :	Abstract
DOI : https://doi.org/10.26751/ijp.v10i1.2651	<i>Cognitive decline is typical in the elderly, caused by natural brain ageing and other factors such as lack of mental and social stimulation and chronic diseases such as hypertension and diabetes. As a result, older adults with cognitive impairment often experience decreased independence in daily living activities and quality of life, thus increasing the need for care and support from family and health workers. This research aims to analyze the relationship between cognitive impairment and daily living for older people in Village A. The independent variables are cognitive impairment, and the dependent variables are activities of daily living. The study was conducted in November 2024 in village A in Kudus district. The study used a cross-sectional method. The research sample of 60 respondents was selected through the Random Sampling technique. The activity daily living questionnaire used the Barthel Index, and the cognitive impairment questionnaire used the Mini-Mental State Exam (MMSE), which was valid and reliable. Data analysis used the Spearman Rank test. The results of the study showed Cognitive disorders in the elderly in Village A were mostly probable cognitive disorders, amounting to 28 respondents (45.2%). Daily living activities of older people are primarily dependent on 34 respondents (54.8%). There is a relationship between cognitive disorders and daily living activities in Village A because the p-value is $0.001 < (\alpha = 0.05)$ with a correlation coefficient value (0.443), meaning that the better the cognitive disorder, the lower the dependency on daily living activities. It is necessary to do activities such as reading and balance exercises to maintain the quality of life of the elderly and slow down the decline in activity and daily living ability due to cognitive disorders.</i>
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I. PENDAHULUAN

The elderly will experience several changes, including cognitive decline. Cognitive decline related to thinking in older people is influenced by the condition of brain cells that age with age (Eka et al., 2021). World Health Organization (WHO) in 2020, The global prevalence of cognitive impairment is estimated to range from 5.1% to 41%, with a median of 19.0% and a range of 22 to 76.8 per 1000 individuals each year According to research (Ramli & Fadhilah,

2020a), Falls cause more than 5 million deaths each year, with an estimated 10 million deaths in 2020. Developing countries are responsible for 70% of these deaths. Dementia is a decline in cognitive function that often occurs in the elderly. The prevalence of dementia is higher in women, at 16%, compared to 11% in men.

Several risk factors for cognitive decline in the elderly determine the Ability to perform ADL. Cognitive disorders in the elderly result in changes in the role and

function of the elderly in carrying out social interactions in the family environment and the surrounding community. This is caused by the attitude of the elderly, who are less able to listen to the opinions of others and tend to be emotional (Meyla Putri et al., 2024). The ADL assessment was modified by researchers using the Kartz ADL index, which is based on an assessment of the client's independent or dependent function in eating, bathing, toileting, continence (BAC), activities, and dressing (Maryam et al., 2019). Recognizing these risk factors can help prevent or reduce disruption to daily activities.

According to research (Rahmadika Akbar et al., 2020), the results of cognitive measurements can be concluded that 76% of the elderly experience mild cognitive impairment. With increasing age, nerve cells also die, while human nerve cells cannot undergo mitosis, so cells cannot regenerate into new cells. With the presence of dead cells, the number of cells decreases so that nerve tissue atrophy occurs. In addition to age, factors that affect cognitive function are other comorbid diseases. In general, the elderly have disorders in short-term memory processing.

The impact of cognitive disorders, if not immediately addressed, will interfere with the Ability to fulfil *activities in daily living*. *Activity Daily Living* is a daily activity that must be measured to determine cognitive abilities when carrying out activities of daily living. These are activities that are commonly done in everyday life, such as eating, dressing, and walking (moving the body from one place to another without assistance), which aim to fulfil the rational need to meet other people (family and community activities that are usually done in everyday life). Because of their below-average intellectual abilities, mentally disabled adolescents have weak learning abilities and social adjustments, which significantly affect their daily development. Their thinking and personality development are disturbed, and they are unable to live independently in society. Developmental delays are one of the

factors that inhibit daily activities (Dewi et al., 2019).

Based on the initial survey on August 6, 2024, conducted by researchers in village A. Of the 15 respondents who were interviewed by asking questions about daily living activities, the results were 6 independent people, 4 people with mild dependence, 3 people with moderate dependence and 2 people with severe dependence. Based on the interview results, health workers have made self-management efforts for the elderly who experience cognitive disorders, including counselling. For measuring cognitive disorders using MMSE (Mini Mental Status Exam), the results were 8 normal people, 4 people with probable cognitive disorders and 3 people with definite cognitive disorders.

This study is different from previous studies by (Suswanti et al., 2020), which only focused on risk factors for cognitive impairment in the elderly, while this study focuses on the relationship between cognitive impairment and *daily living activities* in the elderly. According to population data from Village A in 2020, the pre-elderly population was 227 people, the elderly 358 people, and the high-risk elderly 258 people. To find out the relationship between cognitive impairment and activity in daily living for the elderly in village A. Based on the background problems above, the researcher is interested in studying in depth the "Relationship between Cognitive Disorders and *Daily Living Activities* In the Elderly Year 2024".

II. RESEARCH METHODS

This type of research is quantitative research. where data collection is carried out using instruments and statistical data analysis (Sugiyono, 2019). The independent variables are cognitive impairment, and the dependent variables are activity and daily living. The study was conducted in Village A, Kudus Regency, where the population used in this study were all elderly hypertensives who were members of the Posbindu Village A based on data from the village population

data with a total population of 15 elderly. The number of samples taken using the purposive sampling method was 62 respondents, calculated using Isaac Michael's sample size formula. Research data collection began in November 2024.

Folstein Marsal developed the Mini-Mental Status Exam (MMSE) cognitive impairment questionnaire. MMSE is a standard questionnaire that has been tested for validity and reliability. MMSE consists of 11 aspects of questions. The questionnaire results are categorized into three categories: 1) Normal, score 24-30. 2) Mild cognitive impairment, score 17-23. 3) Severe cognitive impairment, score 0-16. The smaller the value of cognitive impairment, the worse, and vice versa. The validity test of 0.776 is higher than the p-value (0.001), and the reliability with the *Pearson coefficient test* with a value of 0.827.(Widia Komala et al., 2021)

Barthel Index Activity Daily Living Questionnaire, developed by Mahoney and Barthel. Barthel Index is a scale used to measure ADL that has been tested for validity and reliability, consisting of 10 aspects of questions. The results of the questionnaire are categorized into 5, namely 1) Independent with a score of 20. 2) Light dependence with a score of 12-19. 3) Moderate dependence with a score of 9-11. 4) Heavy dependence with a score of 5-8. 5) Total dependence with a score of 0-4. The higher the ADL value, the better and vice versa. The validity test obtained $r > 0.4438$, and the reliability test was 0.884(Oktari et al., n.d. 2020 dalam Putranti).

The analysis in this study was to determine the relationship between cognitive disorders and daily living activities in Village A Kudus, which was processed statistically using the *Spearman rank statistical test*. *This research has been declared to have passed ethical review from the Health Research Ethics Commission (KEPK) Muhammadiyah University of Kudus with Number 66/Z-7/KEPK/UMKU/XI/2024 on November 23, 2024. This research ethics also regulates how researchers behave during report preparation and research implementation*

III. RESULTS AND DISCUSSION

In this chapter, the results of the research from data collection using a questionnaire filled out by respondents regarding "The Relationship between Cognitive Disorders and *Daily Living Activities*" will be presented. In Elderly Village A Year 2024 ". Data collection in this study was carried out in November 2024 on 62 respondents.

Respondent Characteristics Based on Age

Characteristics	f	%
Age		
Elderly	54	87,1
Advanced old age	8	12,9
Gender		
Man	16	25,8
Woman	46	74,2
Education		
No school	56	90,3
Elementary School	6	9,7
Job Category		
Farm workers	7	11,3
Self-employed	1	1,6
Housewife	47	75,8
Other	7	11,3
Amount	64	100

Based on the Table above, it can be seen that the majority of respondents are in the age category of Elderly 54 respondents (87,1%). Based on the majority of respondents by gender category were female, as many as 46 respondents (74,2 %). Based on the majority of respondents in the education level category were those who did not attend school, namely 56 respondents (90,3 %). Above, it can be seen that the majority of respondents work as housewives, namely 47 respondents (75,8 %).

Frequency Distribution Based on Activity Daily Living Questionnaire.

Table 6. Frequency Distribution Based on the Activity Daily Living Questionnaire

ADL Category	f	%
Total dependency	10	16,1
Dependence	34	54,8
independent	18	29,0
Total	62	100

(Source: Primary Data Processing Results, 2024)

Based on Table 6 above, it can be seen that the majority of respondents are in the dependency category, namely 34 respondents (54.8 %).

Frequency Distribution Based on Cognitive Disorders Questionnaire

Table 7. Frequency Distribution Based on Cognitive Disorders Questionnaire

Fall Category	f	%
definite	14	22.6
Probable	28	45.2
Normal	20	32.3
Total	62	100

(Source: Primary Data Processing Results, 2024)

Based on Table 7 above, it can be seen that the majority of respondents in the probable cognitive disorder category were 28 respondents (45.2 %).

The relationship between cognitive impairment and daily living activities in the elderly in Village A, Dawe District, Kudus Regency

Table 8. Frequency distribution of the relationship between cognitive disorders and daily living activities

Mental Status	(n)	(%)	P. Value	Correlation value
definite	14	100	0.000	0.443
Probable	28	100		
Normal	20	100		
Total	62	100		

(Source: Primary Data Processing Results, 2024)

Based on Table 8 above, it can be seen that the p-value is $0.000 < 0.05$, and the correlation value is 0.443.

Discussion

Respondent Characteristics

The results of the study obtained characteristics based on gender, and it shows that of the 62 respondents, the majority were female, as many as 46 respondents (72.8 %). Women tend to have a higher risk of cognitive disorders due to hormonal differences. For example, decreased estrogen hormone after menopause is known to affect cognitive function, such as memory and concentration. This is in line with research (Widyantoro et al., 2021) showing that the

elderly in this study were primarily female, with as many as 42 elderly (57.5%).

This study shows that the majority of respondents are in the age range of 60-65 years. As age increases, there is a decrease in the function of nerve cells in the brain, including changes in brain structure, such as brain atrophy (shrinking) and a decrease in neurotransmitters. Decreased glucose metabolism in the brain can affect the brain's Ability to function optimally, thus contributing to cognitive impairment. The results of this study are in line with the (Widyantoro et al., 2021) fact that age has a significant relationship with daily living activities.

The majority of respondents' education level in this study was unschooled, amounting to 56 respondents (90.3%). This study is supported (Widyantoro et al., 2021) by the fact that the majority of older adults in this study were unschooled. Low education has limitations in understanding the importance of a healthy lifestyle or techniques for carrying out daily activities efficiently. This can increase the risk of limitations in performing ADL. Low education can contribute to cognitive impairment because education affects brain capacity.

Based on the type of work, the majority are housewives, 47 respondents (75.8%). Homemakers can experience chronic stress or psychological fatigue due to the pressure to take care of the family, which can have a negative impact on cognitive function. This study is supported by (Anny et al., 2022), showing that most respondents are housewives. Elderly homemakers are at risk of experiencing cognitive disorders influenced by daily work factors, such as routines that lack mental stimulation.

Cognitive Disorders

Based on the results of research in Village A, Kudus Regency, on elderly with cognitive disorders, it was found that most respondents had probable cognitive disorders, namely 28 respondents (45.2%). Fourteen respondents (22.6%) were definite cognitive disorders

and 20 respondents (32.3%) were normal. The symptoms of cognitive disorders include difficulty remembering, confusion, anxiety, and difficulty understanding. With this probable mental status, it is at risk of affecting the health of the elderly. When cognitive disorders in the elderly are probable, it will worsen the condition of the elderly and vice versa.

Cognitive Ability is the Ability to think and provide a rationale, including the process of learning, remembering, assessing, orientation, perceiving and paying attention. Cognitive function is a process of all sensory input (tactile, visual and auditory) being changed and processed to be able to reason on someone's input. Aspects of cognition include orientation, language, concentration, memory, and reasoning. Cognitive function is generally caused by disorders of the central nervous system, which include disorders of oxygen supply to the brain, degeneration/ageing, Alzheimer's disease and malnutrition. From these factors, the problems often faced by the elderly who experience mental changes (cognitive disorders) include disorders of the orientation of time, space, and place and not readily accepting new things/ideas (Manurung et al., 2019).

The elderly in Village A mostly have probable cognitive disorders, amounting to 28 respondents (45.2%). This can be influenced by age factors because there is a decline in body function. This study is in line with Dalam Ramli & Fadhillah (2020), the risk factors for cognitive dysfunction are age, gender, race, genetics, blood pressure, heart failure, heart arrhythmia, diabetes mellitus, lipid and cholesterol levels, thyroid function, obesity, nutrition, alcohol, smoking and trauma.

The elderly will experience several changes, including cognitive decline. Cognitive decline related to thinking in the elderly is influenced by the condition of brain cells that age with age (Eka et al., 2021). Cognitive decline is the most serious problem in the ageing process, making it difficult for the elderly to live independently, increasing the risk of dementia, and leading

to behavioural problems and decreased quality of life. Cognitive disorders are often ignored in the elderly because they are often called the ageing process (Rini et al., n.d.2019). Cognitive disorders also have an impact on the quality of life of the elderly. This can happen in early cognitive disorders or mild cognitive disorders (Suswanti et al., 2020).

The impact of cognitive disorders, if not immediately addressed, will interfere with the Ability to fulfil *activities in daily living*. *Activity Daily Living* is a daily activity that must be measured to determine cognitive abilities when carrying out activities of daily living. These are activities that are commonly done in everyday life, such as eating, dressing, and walking (moving the body from one place to another without assistance), which aim to fulfil the rational need to meet other people (family and community activities that are usually done in everyday life). Because of their below-average intellectual abilities, mentally disabled adolescents have weak learning abilities and social adjustments, which significantly affect their daily development. Their thinking and personality development are disturbed, and they are unable to live independently in society. Developmental delays are one of the factors that inhibit daily activities (Dewi et al., 2019).

Activity Daily Living (ADL)

Based on the results of the study in Village A, it was found that most respondents had ADL dependency, amounting to 34 respondents (54.8%). Factors that influence daily living activities according to (Andriani, 2021): 1) Age: During development from infant to adult, a person will slowly change from dependent to independent in performing ADL. 2) Biological health: A person's biological health can affect the Ability to participate in performing ADL. Disorders in this system can interfere with the fulfilment of ADL. 3) Cognitive function: Cognitive level can affect a person's Ability to perform ADL. Cognitive function shows the process of receiving, organizing and interpreting

sensory stimuli to think and solve problems. 4) Mental status shows a person's intellectual state; mental status will have implications for fulfilling the individual's basic needs. 5) Elderly over time, the elderly experience a decline in physical function.

These results are supported by previous research by Fauji et al., n.d. (2019) that the elderly who are independent in *Activity Daily of Living* (ADL) are 20 older adults (66.7%) with good cognitive abilities, while the elderly who are dependent are 10 older adults (33.3%) in fulfilling ADL 1 older adult (3.3%) with good cognitive abilities, and 9 older adults (30%) who are dependent experience probable cognitive disorders.

The relationship between cognitive impairment and daily living activities in the elderly

The results of the study showed that there was a relationship between cognitive impairment and daily living activities in the elderly in Village A, Kudus Regency. The results of statistical tests using Spearman's rho with the SPSS program obtained a p-value of $0.000 < (\alpha = 0.05)$, so H_0 was rejected, which means there is a relationship between cognitive impairment and daily living activities in Village A, Kudus Regency. Based on the distribution in Table 9, it is known that in the elderly with total dependency on daily living activity, the majority experience definite cognitive impairment, while in the elderly who have a dependency on daily living activity, the majority experience probable cognitive impairment. The results of the Spearman rank distribution obtained a p-value of $0.000 < (\alpha = 0.05)$, and the correlation coefficient value (0.443) is in the range of 0.400-0.599 and has a positive relationship direction, meaning that the higher the cognitive impairment, the higher the dependency and vice versa.

The elderly will experience several changes, including cognitive decline. Cognitive decline related to thinking in the elderly is influenced by the condition of brain cells that age with age (Eka et al., 2021).

Cognitive decline is the most serious problem in the ageing process, making it difficult for the elderly to live independently, increasing the risk of dementia, and leading to behavioural problems and decreased quality of life. Cognitive disorders are often ignored in the elderly because they are often called the ageing process (Rini et al., n.d.2019). Cognitive disorders also have an impact on the quality of life of the elderly. This can happen in early-stage cognitive disorders or mild cognitive disorders (Suswanti et al., 2020).

Supported by research by Asraf et al. (2022), most older adults experience physical health disorders from mild to severe levels, and most older adults experience cognitive dysfunction from mild to moderate levels. This shows that physical health status can affect the elderly's Ability to fulfil daily living activities.

IV. RESEARCH LIMITATIONS

The research conducted still has many shortcomings and limitations; namely, in this study, the variables studied were only cognitive disorders and daily living activities; it is necessary to explore other variables that may affect daily living activities in the elderly.

V. CONCLUSION

There is a relationship between cognitive impairment and daily living activities in Village A, meaning that the better the cognitive impairment, the lower the dependence on daily living activities. Further researchers are expected to measure other variables that may affect daily living activities in the elderly.

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