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The Relationship Between Cognitive Impairment and Activity of Daily Living (ADL) Among Elderly

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A B S T R A C T

Cognitive impairment is a serious problem because it can interfere with older people's daily activities and independence. Entering old age, individuals have the potential to experience changes in character. This is related to the decline in cognitive abilities which will result in difficulties in carrying out their activities, thereby allowing older people to become dependent on others. This research aimed to determine the relationship between cognitive impairment and Activity of Daily Living (ADL) in older adults at Griya Lansia Jannati Gorontalo City. This quantitative study uses descriptive correlational research methods with a cross-sectional design with a population of 30 and a sample of 30 older adults with a sampling technique, namely total sampling. The research instrument for measuring Cognitive Impairment uses a questionnaire (MMSE), while for measuring Activity of Daily Living using the Katz Index questionnaire. Bivariate analysis used the Spearmen's Rank test. The study results showed no cognitive disorders in the elderly, 12 (40.0%), and activities of daily living, namely independence, a total of 13 (43.3%). The conclusion is that there is a relationship between cognitive impairment and activity of daily living (ADL) in older people at Griya Lansia Jannati Gorontalo City with (P-value = 0.001) <α=0.05. This research is expected to serve as a reference and literature in gerontic nursing so that nurses, caregivers, and the managers of Griya Lansia Jannati can provide interventions that improve cognitive abilities and activities of daily living (ADL) in older people.

INTRODUCTION

The elderly are defined as individuals who have reached the age of over 60 years (1). Meanwhile, the World Health Organization (WHO) defines older people as 65 and above. The elderly have entered the final phase of life (2). In Indonesia, the number of elderly people is expected to increase to 10.92% in 2022, with the number of elderly women exceeding the number of elderly men by 3%. The proportion of elderly women is 51.81%, while the proportion of elderly men is 48.19%. Looking at the data of the entire elderly population in Indonesia, the majority belongs to the young elderly group (60-69 years) at 65.56%, followed by the middle-aged elderly group (70-79 years) at 26.76%, and the elderly group (80 years and above) at 7.69% (3). In Gorontalo, the number of elderly residents continues to increase every year. In 2018, it was 7.82%; in 2019, it was 8.09%; and in 2020, it was 8.36% (4).

The elderly population in Indonesia is increasing, and age-related health issues are also on the rise. According to data from the World Health Organization (WHO), it is estimated that 121 million people experience cognitive decline in old age, with 5.8% being male and 9.5% female. Forgetfulness is more common among elderly , with the prevalence of memory disorders reaching 30% in the 50-59 age group, 35% to 39% in those aged 65 and above, and 85% in those aged 80 and above (5). According to WHO, the number of older adults with cognitive disorders worldwide is estimated to be 47.47 million in 2015, 75.63 million in 2030, and 135.46 million in 2050 (6). In Indonesia, the prevalence of cognitive disorders in the elderly population (aged 65 and above) reached 10.15% in 2017. For elderly individuals aged 75 to 79 years with mental disorders, the figure is 15.8%, and for those aged 80 to 84 years, it is 17.5% (7). In Gorontalo, the number of elderly has been increasing every year. In 2018, it was 7.82%; in 2019, it was 8.09%; and in 2020 it was 8.36% (8). A direct observation conducted by the researcher at Griya Lansia Jannati showed 23 elderly. Based on interviews conducted with 6 elderly experiencing cognitive decline, it was found that 2 elderly did not remember the day, 2 did not remember the year, 3 did not remember the date, and 2 had difficulty recalling recently mentioned objects. After conducting interviews with 6 elderly about their daily activities, 3 said that they sometimes could not control urination. When getting up from a sitting position, they needed assistance from another person or used a cane.

Cognitive function is a mental process involved in selecting, storing, processing, and disseminating information obtained through external stimuli. Cognitive function involves specific cognitive domains: attention, memory, language, visuospatial skills, and executive function (planning, organizing, and executing functions). Cognitive decline can include forgetfulness, ranging from mild cognitive impairment to dementia (9). The decrease in cognitive function is one factor affecting the independence of activities of daily living (ADL) in the elderly. Rigidity towards things, loss of interest, loss of previously enjoyed hobbies, and so on are closely related to deterioration from a biopsychosocial perspective. This decline may be caused by reduced cognitive performance and psychosocial aspects (10).

Cognitive decline in the elderly is the most common cause of the inability to perform activities of daily living (ADL) and the most common reason why older people depend on others for self-care (11). Activities of daily living (ADLs) are routine activities performed independently. ADLs include the ability to bathe, groom oneself, dress, eat, prepare meals, groom, maintain personal hygiene, defecate, urinate, and move around (12).

Factors that influence activities of daily living (ADL) include age, developmental status, stress levels, mental status, and cognitive function (13). Cognitive decline affects central processing and reaction time, significantly reducing social functions and abilities compared to previous levels. This results in elderly individuals losing interest in daily activities (14). Cognitive decline causes damage to the central nervous system, particularly the reduction of brain mass and decreased blood flow to the brain. As a result, core processes and reaction times slow down, and social and work functions experience a significant decline compared to previous abilities. This leads to elderly individuals losing interest in daily activities (15).

The direct observation conducted by the researcher at Griya Lansia Jannati revealed that there were 23 elderly individuals. Based on interviews with 6 older adults experiencing cognitive decline, it was found that 2 elderly individuals did not remember the day, 2 did not remember the year, 3 could not remember the date, and 2 had difficulty recalling recently mentioned objects. After conducting interviews with these 6 elderly individuals about their daily activities, 3 noted that they sometimes could not control urination. When getting up from a sitting position, they needed assistance from another person or used a cane.

Based on the description above, the researcher is interested in conducting a study to analyze the relationship between cognitive impairment and Activities of Daily Living (ADL) in the elderly at Panti Griya Lansia Jannati, Gorontalo City.

METHODS

This research design uses a quantitative approach with a descriptive correlational design and a cross-sectional approach. The population in this study consists of all elderly individuals at Griya Lansia Jannati, Gorontalo City, totaling 30 elderly. The sampling technique used is total sampling, resulting in 30 respondents. The instruments used are the Mini-Mental State Examination (MMSE) to measure cognitive impairment in the elderly and the Katz Index to assess Activities of Daily Living (ADL). Both instruments have undergone validity and reliability testing. The validity test for the MMSE instrument resulted in a value of 0.776, and its reliability value was 0.887. In contrast, the validity test for the Katz Index instrument resulted in values ranging from 0.74 to 0.88, indicating that the questionnaire is valid. The reliability test for the Katz Index questionnaire produced a coefficient α of 0.94, confirming that the questionnaire is a reliable and valid instrument. This study has passed the ethical review with approval number 173A/UN47.B7/KE/2024. The analysis test uses Spearman Rank Test to determine the relationship between cognitive impairment and Activities of Daily Living (ADL) in the elderly.

RESULT AND DISCUSSION

RESULTS

Respondent Characteristics

Table 1
Distribution of Respondent Characteristics at Griya Lansia Jannati, Gorontalo City

Characteristics		Total	
		n	%
Age			
	Elderly 60 -74 years	29	96,7
	Old 75 – 90 years	1	3,3
Gender			
	Female	20	66,7
	Male	10	33,3
Education			
	No Education	3	16,7
	Elementary School	13	33,3
	Junior High School	9	30,0
	Senior High School	3	13,3
	Bachelor's Degree	2	6,7

Source: Primary Data, 2023

Based on Table 1, the majority of respondents are in the age range of 60-74 years, with 29 respondents (96.7%), and the smallest group is in the age range of 75-90 years, with 1 respondent (3.3%). The table also shows that most respondents are female, with 20 respondents (66.7%), while the lowest number is male, with 10 respondents (33.3%). Regarding the distribution of respondents by education, the highest number is at the elementary school (SD) level, with 13 respondents (33.3%), and the lowest is at the bachelor's (S1) level, with 2 respondents (6.7%) out of a total of 30 respondents.

Cognitive Impairment in Elderly

Table 2
Cognitive Impairment in the Elderly at Griya Lansia Jannati, Gorontalo City

No.	Cognitive Impairment	(n)	(%)
1	Severe Cognitive Impairment	9	30,0
2	Mild Cognitive Impairment	9	30,0
3	No Cognitive Impairment	12	40,0
	Total	30	100

Source: Primary Data, 2023

Table 2 shows that the highest cognitive impairment in the elderly is No Cognitive Impairment, with a total of 12 individuals (40.0%), and the lowest is Mild Cognitive Impairment, with 9 individuals (30.0%), as well as Severe Cognitive Impairment**,** with 9 individuals (30.0%). This indicates that the majority (40.0%) of respondents have no cognitive impairment.

Activity of Daily Living (ADL)

Table 3
Activity of Daily Living in the Elderly at Griya Lansia Jannati, Gorontalo City

No.	*Activity of Daily Living*	(n)	(%)
1	Totally Dependent	5	16,7
2	Moderately Dependent	5	16,7
3	Mildly Dependently	7	23,3
4	Independent Total	13	43,3
	Total	30	100

Source: Primary Data, 2023

In Table 3, the highest level of Activities of Daily Living (ADL) in the elderly is Independent Total**,** with 13 individuals (43.3%), and the lowest is Moderately Dependent, with 5 individuals (16.7%), and **Dependent,** with 5 individuals (16.7%). This indicates that most (43.3%) respondents fall under the Independent Total category regarding ADL.

The Relationship Between Cognitive Impairment and Activities of Daily Living (ADL) in the Elderly

Table 4
The Relationship Between Cognitive Impairment and Activities of Daily Living (ADL) in the Elderly

Cognitive Impairment	*Activity Of Daily Living* (ADL)				Total	Statistics *(p- value)*
	Total Dependent	Moderate Dependent	Mild Dependent	Independent Total		
Severe Cognitive Impairment	5	2	2	0	9	0,001
Mild Cognitive Impairment	0	1	3	5	9	
No Cognitive Impairment	0	2	2	8	12	
Total	5	5	7	13	30	

Sumber : Data Primer, Tahun 2023

Table 4 above shows that respondents with Severe Cognitive Impairment and Dependent ADL numbered 5 respondents (16.7%), and respondents with Mild Cognitive Impairment and Dependent ADL numbered 0 respondents (0%). In contrast, those with No Cognitive Impairment and Dependent ADL numbered 1 respondent (3.3%). Next, for respondents with Severe Cognitive Impairment and Moderately Dependent ADL**,** there were 2 respondents (6.7%); respondents with Mild Cognitive Impairment and Moderately Dependent ADL numbered 1 respondent (3.3%), while those with No Cognitive Impairment and Moderately Dependent ADL numbered 2 respondents (6.7%). Furthermore, respondents with Severe Cognitive Impairment and Mildly Dependent ADL numbered 2 respondents (6.7%), and respondents with Mild Cognitive Impairment and Mildly Dependent ADL numbered 3 respondents (10.0%). In contrast, those with No Cognitive Impairment and Mildly Dependent ADL numbered 1 **re**spondent (3.3%). Lastly, for respondents with Severe Cognitive Impairment and Independent Total ADL, there were 0 respondents (0%); respondents with Mild Cognitive Impairment and Independent Total ADL numbered 5 respondents (16.7%), while those with No Cognitive Impairment and **B** numbered 8 respondents (26.7%).

The statistical test using the Spearman test obtained a p-value of 0.001. This significant value is smaller than the alpha value ($\alpha = 0.05$); thus**,** HO **i**s rejected, which means there is a relationship between Cognitive Impairment and ADL in elderly at Griya Lansia Jannati, Gorontalo City.

DISCUSSION

Cognitive Impairment in Elderly

According to the study results, it was found that respondents categorized as No Cognitive Impairment totaled 12 individuals (40.0%). This is due to the elderly's ability to perform orientation well, subtract numbers in sequence, known as attention and calculation, recall past events, and communicate effectively. This aligns with a study (16) that shows no cognitive impairment; in this aspect, it is supported by good attention and calculation, so elderly individuals with healthy minds can repeat and mention information accurately in a short time or a few seconds, as explained in (17). Attention is the individual's ability to respond to specific stimuli while ignoring others. Based on the data, 40 respondents (66.7%) indicated that the elderly still have a good recall process for recent memory (recent memory) within a few minutes, showing that older people can remain focused and recall information well.

Based on the study results, it was found that respondents categorized as Mild Cognitive Impairment totaled 9 individuals (30.0%). This is due to a decline in the elderly's calculation abilities, with difficulties when performing sequential subtraction and a reduced ability to remember previously mentioned objects. This decline occurs due to the weakening of the individual's intellectual capacity, which can lead to cognitive function deterioration. This is supported by Agustia's (2014) research, which found mild cognitive impairment. According to the study data, some elderly individuals reported they could not subtract numbers in sequence and forgot what they had previously done (18). Tamher and Noorkasiani (2009) stated that one of the health issues faced by the elderly is intellectual decline (intellectual impairment or dementia). Dementia is a condition characterized by a decrease in a person's intellectual capacity, which can result in cognitive function deterioration.

Based on the findings of this study, it was revealed that respondents experienced Severe Cognitive Impairment, with 9 individuals (30.0%) reporting this condition. Respondents reported having difficulty recognizing the day, date, country, and name of the nursing home and experiencing a decline in attention and the ability to subtract numbers and spell words sequentially. Additionally, they experienced a decreased ability to recall previously mentioned objects, difficulties in repeating words, and spontaneous writing challenges. As stated in the research by Yulianti & Hidayati (2017), Severe Cognitive Impairment can be observed through interviews with elderly individuals, where those with severe cognitive impairment cannot orient themselves properly, cannot count correctly, and cannot recall past events. Moreover, the elderly individuals could not write or read optimally (19). Zega's study (2021) strengthens these findings, stating that cognitive impairments were below normal levels. This was supported by a questionnaire showing that the elderly had difficulties recognizing time and place, paying attention, sequentially subtracting numbers five times, spelling words, and recalling previously mentioned objects or words. Additionally, they showed a decline in recognizing objects and repeating language (20).

From this study, based on gender, most respondents were female, totaling 20 elderly individuals (66.7%). In this research, women experienced a more significant decline in cognitive ability compared to men. This is in line with the theory expressed by Hutasuhut & Angnesti (2020), who stated that women have a higher risk of cognitive decline, which is influenced by endogenous sex hormones on cognitive function. Estrogen receptors have been found in brain areas involved in learning and memory (21). Handajani's (2020) study also noted that cognitive decline occurs more frequently in women than men (22). Based on the research findings, supporting theories, and previous studies, the researcher concludes that the cognitive impairment in the elderly at Griya Lansia Jannati, Gorontalo, is primarily at the level of not experiencing cognitive impairment.

Activity of Daily Living in the Elderly at Griya Lansia Jannati, Gorontalo City

Based on the research results, it was found that 13 respondents (43.3%) fell into the category of Total Independence. These respondents could still perform all daily activities independently, without relying on others, such as bathing, dressing, toileting, moving, continence, and eating. According to Widyantoro (2021), the research found that elderly individuals in the Independent category could carry out their daily activities independently, such as bathing, dressing, toileting, moving, continence, and eating (23). This is supported by Muharyani's (2017) study, which stated that elderly individuals in the total independence category are in good health. With good health, respondents can typically perform activities without needing or requiring little assistance from others (11).

The research findings revealed that 6 respondents (20.0%) were categorized as having Mild Dependence, where they stated that they experienced mild dependence. This was due to the fact that the elderly were no longer able to move, manage toileting, or maintain continence. Older people could no longer perform three out of these six activities without the assistance of others. According to Widyantoro (2021), mild dependence is often found in

elderly individuals. This is evident in the elderly population of Wangandalem Village, Tegal Regency, who experience difficulties with continence, moving, and toileting. This is because elderly individuals require assistance from others when performing these activities (23).

Based on the research findings, 6 respondents (20.0%) were categorized as Totally Dependent. These respondents stated that they fully relied on others to meet all their daily needs, such as bathing, dressing, toileting, moving, maintaining continence, and eating. They still required assistance from others. According to Widyantoro (2021), dependent elderly individuals can no longer perform daily activities independently and require help from family members (23).

Based on the research findings, it was found that 5 respondents (16.7%) were categorized as Moderately Dependent. These respondents stated that they experienced moderate dependence because some activities, such as moving and maintaining continence, could no longer be performed independently and still required assistance from others. This aligns with Widyantoro's (2021) study, which states that elderly individuals with moderate dependence criteria also face difficulties in controlling continence and moving around. This study found that the majority of respondents were in the age range of 60-74. This result indicates a relationship between age and Activity of Daily Living (ADL). One theory explains that as people age, there is a natural decline in their ability to care for themselves and interact with their environment, which leads to greater reliance on others. This is consistent with Muharyani's (2017) research, which states that elderly individuals experience increased dependence as they age, including in fulfilling their Activity of Daily Living (ADL) needs. Therefore, as a person ages, their ability to fulfill daily needs declines, leading to a greater reliance on others. Based on the research, supporting theories, and previous studies, the researcher concludes that the level of ADL independence among the elderly at Griya Lansia Jannati, Gorontalo City, falls under the category of total dependence.

Analysis of the Relationship between Sex, Fiber Intake, Fluid Intake, Physical Activity, and Constipation

Table 2. Relationship between Sex, Fiber Intake, Fluid Intake, Physical Activity, and Constipation

Variable	Functional Constipation		p value
	Yes	No	
	n (%)	n (%)	
Gender			
Female	24 (48,00)	26 (52,00)	0,18
Male	29 (36,25)	51 (63,75)	
Fiber intake			
Inadequate	41 (47,67)	45 (52,33)	0,03*
Adequate	12 (27,27)	32 (72,73)	
Fluid intake			
Inadequate	8 (72,73)	3 (27,27)	0,05*
Adequate	45 (37,82)	74 (62,18)	
Physical activity			
Low	27 (64,29)	15 (35,71)	<0,001*
Moderate	20 (39,22)	31 (60,78)	
High	6 (16,22)	31 (83,78)	

*p<0,05; Chi-Square test

DISCUSSION

Functional Constipation

Data on the incidence of functional constipation in Indonesia are not yet available. However, from a previous study, there is data regarding the prevalence of constipation in one area in Indonesia. The research results show that as many as 29.1% of individuals from the adult population living in the East Ciputat area, South Tangerang, experience functional constipation. (18) These results are similar to a study in Spain, which revealed that the prevalence of functional constipation in individuals > 70 years old was 26,8% (19), and another study in Nigeria which stated that as many as 27% of individuals aged 10 to 18 years suffer from functional constipation.(20) The findings of various previous studies in various countries provide lower results than this study's findings. One of the things that may affect is the difference in the characteristics of the subjects who are the respondents to the study. In this study, respondents aged 20 – 60 worked in one office. This is different from Nisa's previous research,

which was conducted on subjects who had very varied jobs, ranging from sedentary to non-sedentary. Age and ethnicity are factors that affect the incidence of constipation. (21)

Gender and Constipation

The results of this study show that women (48%) experienced constipation more than men (36,25%). A higher incidence rate in women is likely due to hormonal influences.(22) other factors can affect this, including the nerves of the pelvic floor muscles that are damaged due to the delivery process or surgery and genital prolapse. (23) A review conducted by Chu et al. showed that from various studies on constipation, the prevalence of constipation was higher in women, with a ratio of 1.4: 1 to 1 for women compared to men. (21) In another review by McCrea, it was also stated that a larger ratio of female and male constipation was found in studies that used the self-reported method of subjects/self-reported (mean=2.65) compared to those that used the Rome criterion (mean=1.75). (24)

Fiber Intake and Constipation

This study shows that the group with low fiber intake is more likely to experience constipation than group with adequate fiber intake. Claudina et al. said that adolescents consume an average of 19.92 grams of fiber daily.(9) A similar result was also found by Soviana E et al, that the average fiber intake in DM patients aged 45-65 years is 14.33 grams daily.(25) Another study by Bardosono et al. found that adults in Indonesia only feed 3.3 – 27.4 grams of fiber a day, while based on the nutritional adequacy rate (AKG) it is recommended for fiber intake of 30 – 32 grams per day for women and 36 – 37 grams per day for men. (26) This shows that Indonesians do not consume sufficient fiber based on the current study and previous studies. The low fiber intake of the Indonesian people is mainly due to a shift in food habits with an increase in the consumption of fast food that is low in fiber.(27)

The results of this study indicate that in the group of subjects who consumed less fiber, the incidence of constipation (52.33%) was not much different from those who did not experience constipation (47.67%). However, in the group with adequate fiber intake, most subjects did not experience constipation (72.73%). Fiber intake plays a role in the ability of feces to bind water in the colon so that the volume of feces increases.(28) Adding as much as 1 gram of fiber daily can reduce the incidence of constipation by 1.8%. (29) The results of this study showed that there was a relationship between fiber intake and the incidence of constipation. These findings are supported by previous research by Ng et al., which used the *Agachan Constipation Score Questionnaire.* The study found a negative correlation between the amount of fiber intake and constipation scores in men and women of various age levels. These results show that high fiber intake has a protective effect against constipation events.(30) Another study by Li et al. found that increased fiber intake was associated with improved stool consistency in subjects with high physical activity, but was not associated with changes in bowel frequency in different physical activity groups. (31) The results of the study showed that the amount of fiber intake consumed did not have the same effect on constipation in each subject and only affected constipation caused by poor stool consistency. Ibrahim et al. stated that there was no association between fibrous food consumption habits and functional constipation.(32) The different findings in this study may be due to differences in the instruments for assessing constipation, the type and amount of food in the food questionnaire, and *the software* used to calculate the amount of fiber. In addition, in the research of Ibrahim et al., almost all respondents had a healthy lifestyle (97.5%), which was assessed based on exercise habits and the consumption of fruits, vegetables, and water.

Fluid Intake and Constipation

Most of the respondents in this study had adequate fluid intake. In this study, the cut-off used for fluid intake adequacy was the recommended fluid intake of 1500 – 2000 mL daily. Previous research by Putri and Mulyani in various rural and urban areas in Indonesia showed that most of the population in urban and rural areas was in a mild dehydration status. (33) This shows that the fluid intake of the Indonesian people is still lacking. Similar results were presented by Claudina et al., who found that most of the respondents were in the category of inadequate fluid intake. (9) These different findings are likely because the limits used to determine fluid adequacy from previous studies are not the same as those used in this study.

Fluid intake affects the consistency of stool. In hard stools, the water content is around 72%, while in soft stools, the water content is at least 76%.(28) Hard stools are one of the symptoms of constipation. (34) In addition, softer stools lead to increased *propulsive* bowel movements, resulting in increased colon transit time and frequency of defecation. (35) This study showed that the group with inadequate fluid intake experienced more constipation (72.73%), while in the group with adequate fluid intake, most of the subjects did not experience constipation (62.18%). The results of this study found that there was a relationship between fluid intake and constipation. Dupont et al.'s research on patients with functional constipation showed that low mineral water consumption and/or high mineral water with a mineral content of 2513 mg/L decreased the incidence of functional constipation.(36). The study by Ng et al. found different results from this study. Ng et al stated that fluid intake did not correlate with the incidence of constipation in adolescent, adult, and childbearing age subjects, while in elderly subjects, a significant weak correlation was found between fluid intake and constipation events. However, in the analysis of

all subjects, there was a significant weak correlation (r=0.245; p=0.000) (30), which was similar to the findings in this study. In contrast to the results of research by Shen et al., fluid intake is a risk factor for constipation when the analysis is carried out without involving other factors. Further analysis using multivariate logistic regression involving various other factors found that there was no relationship between water consumption and constipation. Other factors included in the analysis included gender, ethnicity, education, marital status, income, smoking habits, body mass index, depression, dental health, fiber intake, fat, carbohydrates, protein, sugar, and alcohol consumption. The results showed that the amount of water consumption was not a risk factor for constipation events.(37)

Physical Activity and Constipation

In this study, the physical activity of most respondents was in the category of moderate physical activity (39.23%), although this value was not too different from the low physical activity group (32.31%). These findings align with those presented by Strain et al. who stated that there are 31.3% of individuals with less physical activity globally. (38) Office workers must be more active in moving or doing certain physical activities while working behind a desk.(39) Research by Rosenkranz et al. found that office workers spend more than 78% of their time sitting.(16) This study found that the number was slightly larger in patients with moderate activity compared to less activity, probably because the respondents in this study worked in a company with a field assignment system for their workers. Hence, some workers do physical activity for enough time at work. In addition, a relatively large percentage of respondents with high physical activity. This is possible because the physical activity measured in this study is not only when the respondents are working in the office but also when the respondents are outside the office. One of the factors that can motivate individuals to do physical activity is knowledge about the risk of health problems that occur due to low physical activity.(40) However, this study has yet to assess the magnitude of the respondents' motivation.

Physical activity improves bowel movements. (41) This study found that most of the subjects with low physical activity experienced constipation (64.29%), while in the group of subjects with moderate physical activity (60.78%) and high physical activity (83.78%), most of the respondents did not experience constipation (p<0.001). Research by Huang et al. found that minimal physical activity and sedentary behavior were associated with constipation. The number of unhealthy lifestyle subjects (exercise < 1 hour/day, activities other than exercise <1 hour/day, and sedentary behavior > 4 hours/day) had a higher risk of constipation (OR=1.88; 95%CI; 1.60 - 2.20).(42) Tantawy et al. conducted a comparative study of 2 groups of obese female subjects with chronic

constipation. The first group received physical activity interventions and low-calorie diets, while the second group only received low-calorie diet interventions. The study results showed that in the first group, there was a 33.8% improvement in the Patient Assessment of Constipation – Symptom (PAC-SYM) score compared to 21.8% in the second group.(43) This showed that physical activity increased the improvement of abdominal, rectal, and fecal symptoms in subjects with functional constipation.

Different results were obtained from research conducted by Wilson. The study analyzed the relationship between various types of physical activity, including recreational activity, work-related physical activity, and transportation-related physical activity, with constipation based on the frequency of bowel movements and fecal consistency. Wilson revealed that after a multivariate analysis taking into account age, sex, education, ethnicity, marital status, health status, body mass index, fiber intake, and fluid intake, there was no meaningful type of physical activity that could be used to predict the incidence of constipation (p>0.05).(44) One of the factors that may cause the difference in the results of this study from the previous studies is the difference in the instruments used in the two studies. The research conducted by Wilson connected each type of physical activity according to the division of categories in the Global Physical Activity Questionnaire (GPAQ) with constipation, while in this study, there was no distinction between the types of physical activity carried out by the respondents. This study has not assessed several other factors that can affect the incidence of constipation. Being overweight, insufficient nutritional knowledge, low-calorie consumption, and mental statuses such as stress and depression are suspected to have a role in increasing the incidence of constipation.(6,45) Further research that takes into account factors that have not yet been studied can provide more definitive information regarding the influence of sex factors, fiber intake, fluid intake, and physical activity on constipation.

The Relationship Between Cognitive Impairment and Activities of Daily Living (ADL) in the Elderly

Based on the statistical analysis using the Spearman Rank method, the p-value obtained was $0.001 < 0.05$ ($\alpha = 0.05$), indicating that there is a significant relationship between cognitive impairment and Activity of Daily Living (ADL) among elderly people at Griya Lansia Jannati, Gorontalo City. Furthermore, a correlation coefficient of 0.557 was obtained, which indicates that the strength of the relationship between cognitive impairment and ADL in the elderly shows a moderate correlation (with a strong correlation being 0.51–0.75). Additionally, the correlation coefficient (0.557) is positive, which indicates that the two variables are positively related. This means that as the cognitive condition of older people improves, their activity level also tends to increase.

Based on the findings of this study, there are elderly individuals at Griya Lansia Jannati, Gorontalo City, who experience severe cognitive impairment with total ADL dependence, totaling 5 respondents (16.7%). This condition is caused by a decline in mental function that occurs with aging, marked by difficulties in orientation, registration, attention and calculation, memory, and language. This leads to total dependence on daily activities such as bathing, dressing, using the bathroom, moving, controlling urination, and eating, all of which require assistance. Research by Manurung et al. (2016) states that aging triggers anatomical changes such as brain shrinkage and biochemical changes in the Central Nervous System (CNS), which in turn can lead to a decline in cognitive function (24). Research by Handajani (2020) also supports the idea that the decline in cognitive function among the elderly involves aspects such as orientation, registration, attention and calculation, memory, and language, which can lead to the inability to carry out daily activities (22).

In this study, it is also observed that elderly individuals at Griya Lansia Jannati in Gorontalo City, who experience severe cognitive impairment with moderate ADL dependence, totaled 2 respondents (6.7%). This condition is caused by a decline in orientation, registration, attention and calculation, memory, and language, which makes it difficult for the elderly to fulfill specific daily needs such as moving and controlling urination, which still require assistance. This is consistent with research by Nugroho (2014), which shows that various dependencies in daily activities, such as moving and controlling urination in the elderly, can be caused by multiple factors, including cognitive function impairments (25). Research by Primadayanti (2011) also mentions that a decline in physical and functional abilities can result in elderly individuals relying on others, even to fulfill their Activity of Daily Living (ADL) needs (26).

In addition, this study also found elderly individuals at Griya Lansia Jannati in Gorontalo City who experienced severe cognitive impairment with mild ADL dependence, totaling 2 respondents (6.7%). This condition is caused by a decline in orientation, registration, attention and calculation, memory, and language; however, the elderly individuals are still able to perform daily activities, except for those requiring significant physical effort, such as walking and climbing/descending stairs, where they still need assistance from others, such as family members. This aligns with the opinion of Mangoenprasodjo & Hidayati (2015), who state that the level of independence in the elderly is high, mainly because they are accustomed to handling household tasks related to fulfilling daily needs. Their independence can be seen through the quality of their mental health (27).

Based on the findings of this study, information was obtained that elderly individuals at Griya Lansia Jannati in Gorontalo City who experienced mild cognitive impairment with moderate dependence totaled 1 respondent (3.3%), and those with mild cognitive impairment with mild dependence totaled 3 respondents (10.0%). This condition arises because the elderly individuals experience memory impairments that cause them to forget, resulting in ADL dependence quickly, but they can still carry out some daily activities. According to a study by Gultom (2019), short-term memory is disrupted. However, cognitive abilities such as thinking, remembering, understanding, and making decisions can still be performed, and they can engage in some daily activities such as moving, maintaining continence, and using the toilet (28).

This study found that elderly individuals at Griya Lansia Jannati in Gorontalo City who experienced mild cognitive impairment with total independence numbered 5 respondents (16.7%). This condition occurred because elderly individuals could still carry out daily activities without assistance despite experiencing cognitive decline, which generally happens with age. This is in line with the research by Purba (2020), which mentioned that basic daily activities are routine tasks performed in everyday life. Various physical declines lead to decreased motor function, mobility, and self-care. The mobility decline includes difficulties in bed, transferring, walking/ambulating, and using mobility aids (29).

Based on the results of the study, it was recorded that elderly individuals at Griya Lansia Jannati in Gorontalo City who did not experience cognitive impairment with moderate dependence numbered 2 respondents (6.7%), and those without cognitive impairment with mild dependence also numbered 2 respondents (6.7%). This condition occurred because older people still required assistance in daily activities, such as maintaining continence, transferring, and using the toilet. This is consistent with the study by Pinilih & Rini (2018), which showed that common changes in the elderly include physical decline and psychological deterioration, which ultimately affect daily life, including dependence in fulfilling their daily needs (30).

Based on the findings of this study, there were 8 respondents (16.7%) among the elderly at Griya Lansia Jannati in Gorontalo City who experienced total independence without cognitive impairment. This occurred because the better the cognitive function, the higher the independence older people have in performing daily activities. This is supported by the research of Supriyatno & Fadhilah (2016), which stated that daily activities (ADL) are daily tasks. These activities include ambulation, eating, dressing, bathing, and grooming. The elderly's ability to perform daily activities reflects their functional level (independent or dependent). The independence of the elderly in carrying out all activities is influenced by several factors, one of which is cognitive impairment, which includes mental abilities such as attention, linguistic ability, memory, visual-spatial abilities, conceptualization, and intelligence (31).

Based on the results of this study, supporting theories, and previous studies, the researcher concludes that there is a significant relationship between cognitive impairment and daily living (ADL) activities in the elderly at

Griya Lansia Jannati in Gorontalo City. This is because when elderly individuals experience cognitive dysfunction, it significantly impacts their daily activities. The aging process results in cognitive impairments, which are clearly visible in memory and intelligence, affecting older people's thinking abilities and causing difficulty in remembering, leading to challenges in performing daily tasks, planning, and carrying out activities to meet their daily needs.

CONCLUSION

Based on the research results, the most common cognitive impairment in the elderly at Griya Lansia Jannati Kota Gorontalo is 12 individuals (40.0%) with no cognitive impairment, 9 individuals with mild cognitive impairment (30.0%), and 9 individuals (30.0%) with severe mental impairment. Meanwhile, the majority of the elderly at Griya Lansia Jannati Kota Gorontalo were categorized as independent in their activities of daily living (ADL), with 13 individuals (43.3%) and 6 individuals (20.0%) classified as mildly dependent. Additionally, 6 individuals (20.0%) experienced dependency, with the lowest being 5 individuals (16.7%) in the moderately dependent category. There is a significant relationship between cognitive impairment and daily living (ADL) activities in the elderly at Griya Lansia Jannati Kota Gorontalo, with a p-value of 0.001 ($\alpha = 0.05$).

This study is expected to serve as a reference and literature in the field of gerontological nursing so that nurses, caregivers, and managers at Griya Lansia Jannati can take action to improve cognitive abilities and activities of daily living (ADL) in the elderly.

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