Dementia and Mild Neurocognitive Disorder of Older Adult in Banda Aceh: A Cross-sectional Study

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ABSTRACT

OBJECTIVE: Community-based survey assessing dementia and mild neurocognitive disorder (MNCD) among older adults living in Banda Aceh, Aceh Province, Indonesia.

METHODS: A cross-sectional study was conducted at several Community Health Centres (Puskesmas) in Banda Aceh. All demographic characteristics were collected, and a structured questionnaire, the Saint Louis University Mental Status (SLUMS) examination, was used as the screening tool to detect dementia and MNCD.

RESULTS: The study included a total of 400 participants, with approximately 70% of them being females. The mean age of the participants was 65.48 years. Around 66% of the participants were married, 62.7% had completed high school, and 74.8% were unemployed. The results of the study showed that 48.8% of the participants have mild neurocognitive disorder, and 21% have dementia.

CONCLUSION: Although the cognitive function of older adults was still within the normal range, it is essential to consider that this condition can change as individuals age. Therefore, routine screening and follow-up are necessary to detect changes, and nurses can implement appropriate interventions.

KEYWORDS: Cognitive function; Dementia; Mild Neurocognitive Disorder, Older Adults

INTRODUCTION

Indonesia is starting to enter an aging population due to increasing life expectancy, followed by an increase in older adults. This period was considered crucial, as can be seen from the results of Indonesian population projections, which indicate an increase in the number of retired people by 7% in 2023. This increase will be accompanied by an increase in the older adults' dependency rate of 10% of the total population. This data was based on population projections for Indonesia and provinces until 2035 published by the Indonesian government with collaboration carried out by the Central Statistics Agency, Bappenas, the United Nations Population Fund (UNFPA), and demographic experts[1].

The increase in the number of older adults can cause an increase in the number of people suffering from non-communicable diseases (NCDs), including dementia. Dementia is a progressive and permanent decline of cognitive function that affects language, problem-solving, orientation, memory, judgment, and reasoning. The brain is the source of the damage or injury. Further, a mild neurocognitive stage occurs between normal cognitive aging and dementia and is characterized by difficulties with complex cognitive processes and short-term memory impairment[2].

Globally, there are 55.2 million dementia sufferers; more than 60% of these individuals reside in low- and middle-income nations (LMIC). With aging being the most significant independent risk factor for dementia and life expectancy rising in nearly every country, it is predicted that by 2030 there will be 78 million dementia sufferers worldwide. As of 2019, dementia accounted for 1.6 million deaths and 28.3 million years of life adjusted for disability globally, making it the sixth most common cause of death[3]. In Indonesia, the prevalence of Alzheimer's dementia is around 27.9%[4], and more than 4.297.000 Indonesians suffer from dementia[5].

Globally, dementia is a leading source of reliance and disability in older adults. It impairs memory and other cognitive processes, causes behavioral and emotional shifts, and makes it difficult to carry out everyday tasks and engage freely in society. In every nation, dementia has a substantial negative impact on the health, social welfare, financial, and individual lives of those affected as well as their families[6]. Dementia may cause problems such as a loss of self-care or functioning abilities and difficulty communicating with others. People with dementia will have trouble remembering recent events and addressing challenges as the disease worsens. Since dementia has no known cure, the World Health Organization (WHO) Global Action Dementia Plan's primary focus areas are prevention and the proactive management of modifiable risk factors to postpone or impede the disease's start or course[7].

Thus, public health interventions are necessary to raise awareness of early screening for cognitive

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impairment among older adults. Screening for dementia and early diagnosis among those who are at risk is essential in managing the disease and ensuring preparedness among caregivers. Screening is one way to detect impaired cognitive function in older adults. Screening for cognitive impairment in older adults has become a significant concern in clinical practice and research because complaints of cognitive problems are very commonly reported by older adults in clinical practice, and detecting such conditions can influence the patient's treatment choices and the family's future care plans. In research, identifying respondents with and without relevant cognitive impairment according to study criteria is essential to ensuring the success of optimally targeted intervention[8]. In addition, researchers are seeking to investigate how changes caused by age-related diseases differ from those caused by neurocognitive disorders[9]. Therefore, this research wants to determine changes in cognitive function in older adults due to aging. This study is significant as it addresses a growing health and social concern in Banda Aceh, which, until now, has received limited attention. The findings from this research have the potential to guide policies, healthcare practices, and community interventions to enhance the quality of life for older adults affected by these neurocognitive disorders.

METHODOLOGY

Study Design

A cross-sectional study was conducted at eleven Community Health Centres (Puskesmas) in Banda Aceh.

Population and Sample

The population of the study was 18.850 older adults. The older adults were recruited in this study using purposive sampling. The eligibility criteria for participants were as follows: (1) aged 60 years or older; (2) the participants must live in the survey area; (3) they can read and write; and (4) they can communicate well. Furthermore, the number of samples used in this research was determined using a sample size table developed by Krejcie & Morgan[10]. With a confidence level of 95% and a margin of error of 5%, 378 samples were recruited in this study, and to prevent dropouts, the sample count was increased to 400.

Instrument

All demographic characteristics were collected, and a structured questionnaire, the Saint Louis University Mental Status (SLUMS) examination, was used as the screening tool to detect dementia and mild neurocognitive disorders. SLMUS was developed by Tariq et al., and it was designed as an alternative screening test to detect early symptoms of dementia. It consists of 10 questions with a total score of 30 points. Normal cognitive function score: 25–30; mild

cognitive impairment score: 20-24; and dementia score: 1–19[11]. On the Saint Louis University Mental Status (SLUMS) instrument, researchers carried out the back-translation method using three bilingual experts in nursing. The SLUMS instrument has been tested for validity in various countries and is said to be valid in Turkey and Saudi Arabia. After carrying out back translation, the Saint Louis University Mental Status (SLUMS) instrument will be tested for face validity with five respondents. The Saint Louis University Mental Status (SLUMS) questionnaire has a Cronbach's alpha value of 0.85[12]. Thus, this measuring instrument is reliable because it has a reasonably high reliability value.

Data Analysis

Data were analyzed by using frequency distribution, percentage, and mean.

Ethical Statement

This study has been approved by the Ethical Committee on Health Research, Faculty of Nursing Universitas Syiah Kuala, with reference number 113001060623. The survey was carried out following the committee's guidelines. Before obtaining informed consent, participants were informed of the study's nature, purpose, and potential benefits. Participants were also notified about the length of the interview, their right to withdraw from the study at any time without penalty, and the confidentiality of the survey information.

RESULTS

Characteristics of Respondent

Four hundred older adults who met the inclusion criteria were invited to participate in this study. **Table I** displays the clinical and sociodemographic characteristics of study participants.

Among the 400 participants, approximately 70% were female. The mean age of the participants was 65.48 years. Around 66% of the participants were married, 62.7% had completed high school education, and 74.8% were unemployed.

Neurocognitive function of participants

Based on the total score of the SLUMS questionnaire, there was a distribution of the frequency of cognitive function among older adults in Banda Aceh (**Table II**).

The results of the study showed that 48.8% of the participants have mild neurocognitive disorders, and 21% have dementia.

Tabel II: Distribution of Frequency of Cognitive Function among Older Adults

Cognitive Function	Frequency (n)	Percentage (%)
Normal	121	30.3
Mild Neurocognitive	195	48.8
Dementia	84	21.0

Table I: Characteristic Respondents

Characteristics	Frequency	%	Normal		MNCD		Dementia	
			f	%	F	%	f	%
Age (years)	M (SD) 65.48 (5.6)							
60-75	374	93.5	120	32,1	189	50.5	65	17.4
≥75	26	6.5	1	3.8	6	23.1	19	73.1
Gender								
Male	120	30	40	33.3	60	50	20	16.7
Female	280	70	81	28.9	135	48.2	64	22.9
Education								
Elementary education	79	19.8	9	11.4	38	48.1	32	40.5
High School Education	251	62.7	101	40.2	110	43.8	40	15.9
University education	70	17.5	11	15.7	47	67.1	12	17.1
Employment								
Not employed	299	74.8	82	27.4	147	49.2	70	23.4
Private sector	73	18.3	25	34.2	36	49.3	12	16.4
Retirement	27	6.8	13	48.1	12	44.4	2	7.4
Others	1	0.3	1	100	0	0	0	0
Marital Status								
Married	264	66	96	36.4	127	48.1	41	15.5
Widow	134	33.5	25	18.7	67	50	42	31.3
Divorce	2	0.5	0	0	1	50	1	50
History of Disease								
Single morbidity	272	68	98	36	131	48.2	43	15.8
Multiple morbidity	128	32	23	18	64	50	41	32

DISCUSSION

The most significant finding of the study is that 48.8% of the participants were identified as having mild neurocognitive disorder, and 21% had dementia; this is a substantial prevalence rate and highlights the need for increased attention to cognitive health in this population. A significant percentage of the participants in our study were close to a previous study conducted in a primary care clinic in Malaysia, which found that 40% of the study population had a high risk of developing mild cognitive impairment (MCI)[13]. It is also similar to a previous study conducted in Jakarta, Indonesia, which found that 41.5% of elderly individuals suffer from dementia[14]. It's worth noting that mild neurocognitive disorder is an early stage of cognitive decline and may progress to more severe forms of dementia if not addressed. Cognitive changes among older adults include reduced ability to improve intellectual function, reduced efficiency of nerve transmission in the brain (it can make the information not fully delivered to the brain), reduced ability to accumulate new information and retrieve information from memory, as well as the ability to remember past events better than the ability to remember events that have just happened[15]. The previous study found that physical weakness and cognitive function are interrelated. Cognitive function was related to weakness in interaction, and brain health is closely related to physical and psychological health; there were several factors faced by older adults that greatly influenced their psychology, namely a decline in physical condition, changes in psychosocial aspects, changes related to work, and changes in social roles in the community society[16].

The study's participants represent a diverse cross-section of the older adult population in Banda Aceh. The fact that 70% of the participants were female reflects the well-documented trend of women living longer than men and their higher susceptibility to neurocognitive disorders in older age. The mean age of 65.48 years indicates a greater risk for cognitive decline. Among the 26 older adults aged over 75 years, 19 people (73.1%) had dementia, while of the 374 older adults aged 60 to 75 years, only 65 people (17.4%) had dementia. According to the previous study, perceived age is a reliable biomarker of cognitive evaluation that may represent overall aging, which is linked to dementia[17]. A prior study in Jakarta, Indonesia, found a significant relationship between age and dementia (p = 0.026)[14]; This is also supported by a previous study showing that individuals ≥65 years of age have a 2.5 times higher dementia risk than those 60-64 years of age[18]. An increase in the number of older adults will affect the expansion of senior health facilities, and an increase

in life expectancy will lead to a rise in cases of degenerative diseases, such as dementia[19].

The finding that 66% of participants were married underscores the importance of considering the role of spousal support and caregiving in managing neurocognitive disorders. Among the two divorced older adults, one person (50%) has dementia, while of the 134 older adults who are widows, 42 people (31.3%) have dementia. Of the 264 married older adults, only 41 people (15.5%) have dementia. Spouses often play a significant role in providing care and support for individuals with cognitive impairments. The results of this study follow a previous study, which found that respondents who do not have a partner (husband or wife) are 1.93 times more at risk of experiencing a decline in cognitive function compared to respondents who have a partner (husband or wife) [20]. Older adults with mild to severe dementia can discuss their experiences getting the required help. Elderly sufferers of dementia require comprehensive care that addresses their bio-psycho-social as well as spiritual requirements. Older adults with mild to moderate dementia can enhance their quality of life by maintaining their abilities with the comprehensive support of caregivers and nurses in long-term care facilities [21].

The fact that 62.7% of participants had completed high school education highlights the potential role of education in cognitive health. Among the 79 older adults who completed elementary school, 32 people (40.5%) have dementia. In comparison, of the 251 older adults who completed high school education, 40 people (15.9%) have dementia, and of the 70 older adults who completed university education, only 12 people (17.1%) have dementia. The previous study found that most older adults with abnormal cognitive function have elementary school education; 40 respondents (100%) [22]. Older adults had a significantly higher frequency of low schooling than other people. Age-related low schooling is a recurring issue in the literature[23], being relevant, particularly in developing countries with a more significant proportion of older adults with low education[24]. Consequently, viewing the disparity in low schooling positively is possible because it can reflect generational differences. Thus, we must draw attention to the theory of cognitive reserve, which contends that, in addition to genetic factors, life experiences such as education, occupation, cognitive ability, and physical and social activity can improve an individual's cognitive process and help them adapt more readily to changes in their brains[25].

The finding was that 74.8% of participants were not employed. Not being employed can be when cognitive health issues become more apparent as individuals have more free time and may be less engaged in mentally stimulating activities provided by work. The results of this research are similar to a previous study, which showed a relationship between work and cognitive function in the elderly[22]. However, it's important to note that multiple factors influence cognitive health, so further research is needed to identify them.

CONCLUSION

The study's conclusion emphasizes the dynamic nature of cognitive function in older adults. Overall, the study's results clearly show the cognitive health profile of older adults in Banda Aceh. The high prevalence of mild neurocognitive disorder signals the need for healthcare interventions, education, and support services tailored to this population. Additionally, the demographic characteristics of the participants provide valuable insights into the specific groups that may require targeted interventions and support. Further research and healthcare policy initiatives may be necessary to address this ageing population's cognitive health needs effectively.

AUTHORS CONTRIBUTION

Juanita: Oversees the article's writing, reviewed related concepts, data collection, and esearch development.
Rahmawati: Responsible for identifying supporting articles related to the manuscript and gathering data.
Dara Febriana: Tasked with editing the article, supervises the article writing process, data analysis, and became a correspondence author.

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