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# Prevention of Alzheimer's in Elderly

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**KEYWORDS**
Alzheimer's; Elderly; Psychoeducation; Prevention

**ABSTRACT**

*The increasing number of elderly individuals across countries has brought about new health challenges, one of which is the rising risk of Alzheimer's disease, characterized by progressive cognitive decline. A major problem identified in this study is the lack of public awareness regarding non-pharmacological preventive measures for Alzheimer's. The objective of this activity is to educate elderly participants about effective preventive strategies, including physical activity, reminiscence therapy, and proper brain nutrition. The method used was a psychoeducational seminar conducted on May 20, 2025, in Jakarta, with 15 elderly participants. Evaluation was performed using a pre-test and post-test design, analyzed with the Wilcoxon test. Results showed a significant increase in participants' knowledge after the seminar ($p = 0.003$), with the majority demonstrating improved post-test scores. The findings suggest that community-based health education is highly effective in improving elderly understanding of Alzheimer's prevention. Collaborative efforts between community organizations and health institutions are needed to expand such outreach. This study also serves as a practical model for community service programs that can be replicated in other demographic contexts to promote brain health literacy and preventive behavior.*

## INTRODUCTION

With improved quality of life—both physical and psychological—the likelihood of people living healthy and long lives increases. Globally, the percentage of the population aged 65 years and above is rising significantly. According to data from the World Bank Group (2024), this age group now constitutes a considerable proportion in various countries, especially in more developed nations with higher welfare levels. The increasing number of elderly individuals presents new challenges requiring special attention, particularly in health. One of the primary concerns is cognitive impairment, which impacts the ability to think, remember, and interact with the environment. This condition makes it difficult for older adults to perform daily activities independently and often increases their dependence on others.

Among cognitive disorders, Alzheimer's disease is the most prevalent and severe for the elderly. Alzheimer's disease accounts for 60–70% of all dementia cases worldwide (World Health Organization, 2021). It is a progressive neurodegenerative disorder characterized by the gradual destruction of neurons in the brain, typically manifesting as significant memory loss, difficulty recognizing family members, and impaired cognitive abilities (Knopman et al., 2021). According to Alzheimer's Disease International (ADI), in 2020, over 55 million people globally were living with dementia, a figure projected to double every 20 years, reaching 78 million by 2030 and 139 million by 2050.

This projection underscores the urgency of the issue, especially as the precise etiology of Alzheimer's disease remains elusive. While some familial cases are linked to genetic mutations, the majority of cases have no clearly defined cause (DeTure & Dickson, 2019). Various risk factors—including genetics, lifestyle, cardiovascular disease, and aging—have been implicated, but none are definitive triggers (Silva et al., 2019).

Several hypotheses have been proposed to explain the onset of Alzheimer's disease, notably the amyloid-β protein and tau protein (*P-tau*) hypotheses. Although still debated, these protein deposits are believed to induce neurodegeneration through inflammation and excitotoxicity—overstimulation of neurotransmitter receptors on neuronal membranes (Silva et al., 2019). This process results in memory loss, learning difficulties, and cognitive decline (Knopman et al., 2021). The Amyloid Cascade Theory posits that the accumulation of amyloid-β peptides in the brain, due to an imbalance in production and clearance, is a primary pathogenic mechanism (Hardy & Selkoe, 2002). *P-tau* is a microtubule-associated protein encoded on chromosome 17; its hyperphosphorylation—excess addition of phosphate groups by kinase enzymes—leads to loss of function, neuronal damage, and increased cytotoxicity (Caneus et al., 2018; Giannini et al., 2022, 2023; Wierzba-Bobrowicz et al., 2014).

Currently, therapeutic strategies for Alzheimer's disease focus only on symptom management and slowing disease progression, as no curative treatments exist (Vu et al., 2024). Consequently, preventive measures are emphasized to reduce the risk of Alzheimer's. However, a lack of education about prevention remains a significant challenge, especially among caregivers and communities, where Alzheimer's is often misperceived as a normal aspect of aging. Therefore, this seminar aims to provide comprehensive information, raise awareness, and promote the adoption of healthy lifestyles to minimize Alzheimer's risk.

Adopting a healthy lifestyle, such as engaging in regular physical activity, not only supports general health but also confers significant benefits for brain health. Wang et al. (2021) demonstrated that aerobic and muscle-strengthening activities are effective in maintaining cognitive function, partly by stimulating the production of Brain-Derived Neurotrophic Factor (BDNF), which helps prevent hippocampal atrophy. Systematic reviews and meta-analyses have shown that regular physical activity reduces the negative impact of aging on cognition, whereas physical inactivity increases dementia risk (Lee, 2018).

In addition to physical activity, Reminiscence Therapy (RT)—which involves discussing past experiences—has proven effective in reducing cognitive impairment among the elderly. Lök et al. (2019) found that regular RT improved cognitive function and reduced depression in Alzheimer's patients. Similar benefits were observed in non-Alzheimer's elderly populations, where RT lowered cognitive impairment rates and reduced depression and stress, supporting its use as a non-pharmacological preventive method (Fahmi et al., 2021). Sensory stimulation interventions have also shown promise; studies have linked sensory deficits (e.g., hearing and somatosensory impairments) to increased risk of mild cognitive impairment, and multisensory interventions can enhance cognitive function in elderly individuals with dementia symptoms (Löffler et al., 2024; Octary et al., 2025).

Nutritional factors also play a critical role in cognitive health. As a neurodegenerative disorder, Alzheimer's disease involves neuronal damage, and nutrients such as vitamin D contribute to neuronal development and function. Vitamin D supports the synthesis of neuroprotective substances and regulates neurotransmitter production essential for learning and

memory (Halimsetiono, 2024). Adequate vitamin D intake—through sun exposure, diet (e.g., fatty fish, egg yolks, fortified milk), or supplements—may help prevent Alzheimer's disease. Omega-3 fatty acids have also been associated with reduced cognitive decline; long-term supplementation is linked to lower Alzheimer's risk (Wei et al., 2023).

It is crucial to recognize that preventive strategies for Alzheimer's disease—such as maintaining physical activity, practicing reminiscence therapy, and ensuring adequate intake of brain-supporting nutrients—are accessible and effective, yet underutilized. This is particularly important given the absence of curative treatments; current therapies only alleviate symptoms and slow disease progression. Therefore, prevention remains the primary approach to addressing the growing burden of Alzheimer's disease.

The Indonesian Chinese Association (*INTI*), established on April 10, 1999, is a national organization committed to the principles of the 1945 Constitution of the Republic of Indonesia. One of its subgroups, *PINTI* (INTI women), organizes activities for women members, including social services, arts, and skills training, such as language learning. These activities support Alzheimer's prevention through education and health promotion, aiming to enhance the welfare of the elderly. *PINTI* seeks to collaborate with external institutions to broaden its impact.

With increasing life expectancy worldwide, the elderly population continues to grow, presenting significant public health challenges, particularly regarding cognitive disorders like Alzheimer's disease. Despite numerous studies on pharmacological and non-pharmacological interventions, there is a research gap concerning psychoeducational approaches in community-based settings for elderly groups in Indonesia. The novelty of this study lies in its community-based psychoeducation seminar model, integrating physical activity, reminiscence therapy, and nutritional education as a holistic approach to Alzheimer's prevention. The objective is to assess whether such seminars effectively enhance knowledge about Alzheimer's prevention among elderly participants. The findings are expected to demonstrate that targeted psychoeducation can serve as a strategic, low-cost intervention to reduce future Alzheimer's risk by promoting early lifestyle changes, especially in aging populations with limited access to formal health education.

## METHOD RESEARCH

This study employs a descriptive quantitative approach with a pre-experimental design using a single-group pretest-posttest model. The purpose of this approach is to evaluate the effectiveness of the psychoeducation seminar in increasing elderly participants' knowledge about Alzheimer's disease prevention. The seminar was conducted on May 20, 2025, at the *INTI* Association Secretariat, MGK Kemayoran, Central Jakarta.

The population for this study consisted of elderly members of the *INTI* Association who attended the seminar. Purposive sampling was used, with 15 participants selected to represent the elderly age category. Data collection was performed using pre-test and post-test questionnaires assessing participants' understanding of Alzheimer's disease.

The instrument, a questionnaire, was developed based on fundamental Alzheimer's disease knowledge indicators. Data analysis was conducted using the Wilcoxon Signed-Rank Test because the sample size was less than 30 and the data were non-parametric. The analysis

aimed to determine the difference in scores before and after the seminar, with a significance level of $p < 0.05$ indicating a statistically meaningful effect.

**Event:**

Seminar "Psychoeducation on Alzheimer's Prevention in the Elderly" on May 20, 2025, Tuesday at 10.00-12.00 at the Secretariat of the INTI Association
MGK Kemayoran - Office Tower B 10th floor, Central Jakarta
https://maps.app.goo.gl/fEUo2CdpSCBoRnfy7

**Collaborate:**

CORE Assembly.


**Figure 1. Poster of webinar activities on May 20, 2025**
Source: Researcher

## RESULT AND DISCUSSION

Community Service (PKM) in the form of a seminar entitled "Psychodication of Alzheimer's Prevention in the Elderly" will be held on May 29, 2025, Tuesday, at 10.00-12.30 WIB. At first, the time provided was 10.00-11.30, but at the end of the event it was continued with questions and answers and discussions so that the event only ended at 12.30. The participants who attended this seminar amounted to 15 people, although initially the participants who registered were 35 people. However, because there were road congestion obstacles because it coincided with a demonstration from online motorcycle taxi drivers, the trip to the seminar venue was disrupted. Participants in general have entered the elderly category, there are two participants who are young but take part in the seminar because they have elderly parents. The oldest participant was 82 years old. The following is the age data of the participants.

**Table 1. Age of participants**

| Age (years) | Frequency | Percentage |
|---|---|---|
| < 50 | 3 | 20 |
| 50 - 70 | 5 | 33,33 |
| > 70 | 7 | 46,67 |
| Sum | 15 | 100 |

Source: Researcher

Before the seminar started, a few questions about Alzheimer's were *given to pre-test*. The presentations were carried out alternately because there were four people who delivered it. After the opening, the material was immediately delivered. In the middle of the event is given a game that serves as a reminder of pictures and numbers. The participants enthusiastically participated in the game and rejoiced together because it was not the desired prize but the togetherness and joy of guessing something seemed easy but wrong. After the game, the material resumed, at the end of the game a video about a person's experience with Alzheimer's. At the end of the event, a questionnaire was filled out as *a post-test* of knowledge about Alzheimer's. The following is the seminar material presented.

Alzheimer's is described as the most common type of dementia characterized by a gradual decline in memory and cognitive function, leading to a variety of disorders. The disease develops in three stages, namely the early, middle, and late stages. In the early stages, individuals can still function independently, but begin to experience symptoms such as forgetting people's names, misplacing items, and asking the same questions over and over again. In the middle stage, symptoms become more pronounced and begin to interfere with daily activities, such as disorientation of time and place, difficulty speaking, hallucinations, delusions, and sleep disturbances. Meanwhile, in the final stage, sufferers need full help because they have difficulty eating and swallowing, lose physical ability, and are unable to control bowel movements.

The causes of Alzheimer's according to the National Institute on Aging (NIA) include brain age, genetics, health conditions, and lifestyle. Therefore, it is important to know what can be done as a preventive measure. The three main strategies suggested are: (1) **Physical activity**, as it can improve brain and body health and stimulate the production of Brain-Derived Neurotrophic Factor (BDNF) which keeps brain cells healthy and protects them from damage; (2) **Telling stories about the past** or reminiscence therapy, which can train the brain to stay active and strengthen memory through recounting life experiences; and (3) **Eating healthy**, especially by taking vitamins D and omega-3s which are essential for brain cell growth and protection. Vitamin D can be obtained from sunlight, fatty fish, milk, and supplements, while omega-3s can be found in fish, walnuts, chia seeds, and fish oil supplements.

The implementation of this seminar wants to know whether the delivery of information and descriptions about Alzheimer's can be accepted and understood? So the results of the questionnaire are calculated. The data collected from 15 participants were processed using the Wilcoxon test because participants did not reach 30 people selected for calculation with *a non-parametric paired sample test.* The results showed there was a significant difference in Alzheimer's knowledge before attending the seminar and after attending the seminar with a

significance of 0.003 ($p < 0.05$). The *post-test value* was greater than *the pre-test* found in 10 participants out of 15 participants who attended.

## CONCLUSION

An introduction to both physical and psychological health is essential for the elderly, as fostering enthusiasm remains important despite potential cognitive decline. Although some participants experienced difficulties with language or reading the questionnaire, these challenges were effectively addressed through assistance during data collection. Incorporating brief knowledge segments combined with interactive games helped create a lively atmosphere and facilitated social interaction among participants. The limited time allocated for the seminar was noted, reflecting the high engagement and interest of attendees in the material presented. Future seminars should consider extending the duration and expanding the target audience to include not only elderly individuals but also their younger caregivers or companions. Further research is recommended to evaluate the long-term impact of such psychoeducational interventions on both elderly participants and their support networks, assessing outcomes related to knowledge retention, behavioral changes, and quality of life.

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