

DEMENTIA

Yulson Rasyid¹, Reno Sari Chaniago²,

¹Faculty of Medicine, Baiturrahmah University, Indonesia

² Faculty of Medicine, Baiturrahmah University, Indonesia

Received: 27 July 2025

Revised: 29 July 2025

Accepted: 28 July 2025

Published: 30 July 2025

Corresponding Author:

Author Name*: Yulson Rasyid

Email*:

yulson_rasyid@fk.unbrah.ac.id

Abstrak: *Dementia is a progressive neurodegenerative syndrome characterized by cognitive decline that significantly impairs daily activities and individual independence. This article aims to comprehensively review the clinical aspects of dementia, including epidemiology, classification, risk factors, signs and symptoms, diagnosis, and both pharmacological and non-pharmacological management strategies. The method used is a thematic narrative literature review based on scientific references and current clinical guidelines. Findings indicate that Alzheimer's disease is the most common form of dementia, with major risk factors including advanced age and vascular conditions. Diagnosis is established through neurobehavioral history, physical examination, cognitive tests (MMSE, MoCA, CDT), and neuroimaging. Treatment involves cholinesterase inhibitors (donepezil, rivastigmine), NMDA receptor antagonists (memantine), and non-pharmacological interventions such as cognitive therapies and a person-centered care approach. In conclusion, dementia management requires a multidisciplinary approach involving early detection, symptom control, and comprehensive support to improve patients' quality of life.*

Keywords : *Dementia; Alzheimer's; Cognitive Function; Dementia Therapy; Neuropsychological Diagnosis*

INTRODUCTION

Dementia is a progressive neurodegenerative syndrome characterized by a decline in cognitive functions, including memory, attention, language, executive function, visual-motor perception, and decision-making (World Health Organization [WHO], 2021). This impairment is significant enough to affect a person's ability to perform daily activities independently. Although common in older adults, dementia is not a normal part of the aging process. Globally, dementia is a leading cause of disability and dependency in the older population, with a broad social and economic impact on individuals, families, and the healthcare system (Alzheimer's Disease International [ADI], 2020).

Although most cases of dementia occur in people over 65 years of age, there is a type of dementia that appears earlier, in younger people (<65 years of age), known as Young-Onset Dementia (YOD). The prevalence of YOD is estimated at 67 to 98 per 100,000 people in the 30–64 age group (Sansoni et al., 2016; van Vliet et al., 2013). YOD often has a more heterogeneous etiology than late-onset dementia,



including early-onset Alzheimer's disease, frontotemporal dementia, metabolic disorders, autoimmune disorders, or genetic abnormalities (Draper & Withall, 2016). YOD symptoms can be more varied and often not immediately recognized, resulting in delayed diagnosis and difficulties in early treatment (Rossor et al., 2010).

In addition to clinical challenges, YOD also has broader social and psychological impacts. Individuals with YOD are generally of productive age, have family responsibilities, and are socially and economically active. Therefore, a diagnosis of YOD often carries more severe emotional, economic, and social consequences than late-onset dementia (Withall, 2013). Support for patients and families must also be more complex, encompassing financial planning, family relationships, and employment, as well as ongoing psychosocial support.

Across the dementia spectrum, disease progression leads to a gradual decline in communication, social interaction, and individual independence. Therefore, management approaches must be adaptive and person-centered, emphasizing the importance of caregiver education, cognitive rehabilitation, occupational therapy, and holistic emotional support (Brodaty & Donkin, 2009). Integrated and interdisciplinary interventions are needed to maintain patients' quality of life and prevent caregiver burnout.

Given the clinical complexity and multidimensional impact of dementia, especially in early cases, a deeper understanding of the clinical characteristics, diagnostic mechanisms, and appropriate intervention strategies is necessary. This study aims to comprehensively examine these aspects to contribute to the development of clinical practices and healthcare policies that are more responsive to the needs of patients and families

METODOLOGI

This article uses a thematic narrative literature review approach, which aims to develop a comprehensive understanding of various clinical aspects and management of dementia based on the integration of current scientific sources. This approach was chosen because it allows for in-depth exploration of key concepts through descriptive, analytical, and reflective literature synthesis, without the constraints of a rigid systematic design. The literature sources used include neurology textbooks, clinical practice guidelines from professional organizations such as the World Health Organization (WHO) and the American Academy of Neurology (AAN), and national and international scientific articles obtained from trusted databases such as PubMed, ScienceDirect, and Google Scholar. Sources were selected based on relevance, scientific validity, and recency of publication, with priority given to references published within the last five to ten years.

The literature review was structured using a thematic approach, in which the collected information is grouped into main categories that reflect the logical and hierarchical structure of the dementia topic. These themes include: brain anatomy and physiology, as a foundation for understanding normal cognitive function; classification and types of dementia, including Alzheimer's, frontotemporal dementia, vascular dementia, and Young-Onset Dementia (YOD); risk factors and epidemiology; clinical manifestations based on disease stage; diagnosis and supporting examinations; pathophysiology; and intervention strategies, both pharmacological (such as the use of cholinesterase inhibitors and memantine) and non-pharmacological (such as occupational therapy, cognitive rehabilitation, and psychosocial support).

Each theme is analyzed conceptually to illustrate interrelationships between topics, identify paradigm shifts in clinical practice, and evaluate the therapeutic and ethical implications of suggested interventions. This approach aims not only to describe existing information but also emphasizes contextualization of findings, critical synthesis, and application in healthcare settings, particularly those relevant to the needs of dementia patients and their families. Therefore, this article is expected to be an academic contribution that is not only informative but also applicable in efforts to improve neurogeriatric healthcare in a holistic and evidence-based manner.

RESULTS AND DISCUSSION

Brain Anatomy & Physiology

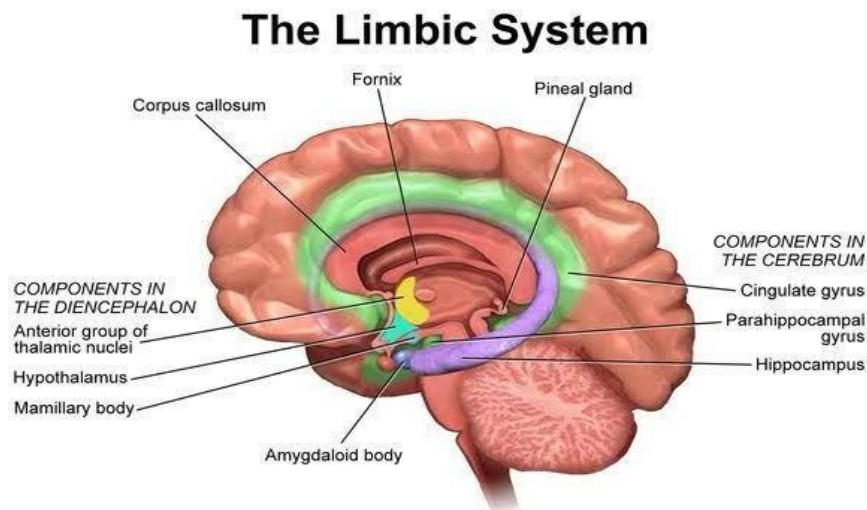


Figure 1. The Limbic System

Brain structures play a crucial role in regulating emotions, cognition, and memory functions associated with conditions like dementia. The amygdala functions as an emotional regulator, with the left hemisphere being more dominant in conscious emotional learning, while the right hemisphere plays a role in unconscious emotional learning. The hippocampus plays a vital role in the formation and storage of long-term memories and facilitates the learning process. The thalamus serves as a central hub for relaying sensory stimuli from the periphery to the cerebral cortex, while the cerebellum plays a crucial role in forming memories related to motor skills.

Furthermore, the cingulate gyrus regulates autonomic functions such as heart rate and blood pressure and plays a role in cognitive processes such as attention. The frontal lobe is an integration center for complex thinking and short-term memory processing. The parietal lobe is involved in reading, sensory perception, memory, and visual-spatial processing. Meanwhile, the temporal lobe plays a role in processing hearing, vision, emotions, memory, and the ability to categorize objects and select relevant auditory and visual stimuli. Finally, the occipital lobe is responsible for primary vision and also contributes to memory, language, and visual-spatial perception. The synergistic interaction of these structures is crucial for maintaining healthy and balanced cognitive function.

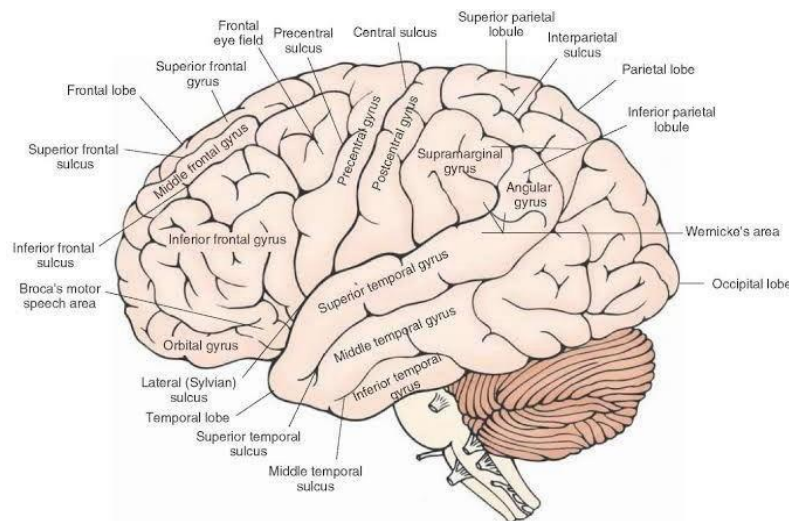


Figure 2. The Lateral View of The Human Brain Anatomy

Definition, Classification, and Risk Factors

Dementia is a chronic and progressive neurodegenerative syndrome characterized by impairment of higher functions such as memory, thinking, language, orientation, calculation, and decision-making. According to the WHO (2015) and the PPDGJ-III, dementia results from permanent brain damage, involving multiple declines in cortical function that impair the patient's independence in daily activities. Dementia generally occurs in individuals over 65 years of age, with a higher risk in those with a family history, advanced age, female gender, and vascular disease.

Globally, the WHO reported that in 2021, there were 57 million people with dementia, with approximately 10 million new cases each year. Approximately 60–70% of cases are caused by Alzheimer's disease, making it the most common form of dementia. Dementia is currently the seventh leading cause of death worldwide and a leading cause of disability in older adults. The global economic burden of dementia has reached US\$1.3 trillion, with approximately 50% borne by informal caregivers, such as family members, who provide an average of five hours of care per day. Women are more affected, both as sufferers and caregivers, contributing up to 70% of care. In Indonesia, the prevalence of Alzheimer's dementia

reaches 27.9%, with more than 4.2 million sufferers. It is estimated that by 2050, the number of elderly people with dementia in Indonesia will increase to 1.6 million.

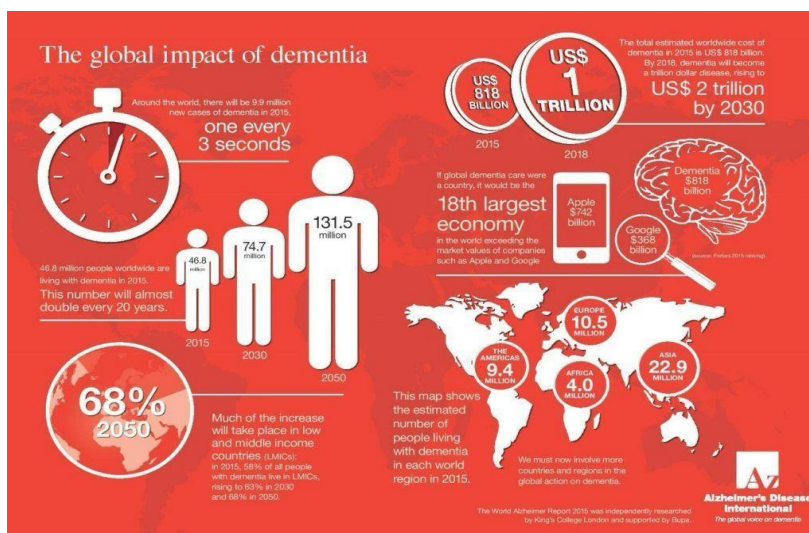


Figure 3. Global Impact of Dementia

Anatomically, dementia is divided into cortical and subcortical dementia. Based on etiology and disease course, it is divided into reversible and irreversible dementia.

Table 1. Classification of dementia based on anatomy

Characteristic	Cortical Dementia	Subcortical Dementia
Appearance	Alert, healthy	Abnormal, weak
Activity	Normal	Sluggish
Posture	Straight, upright	Stooped, dystonic
Gait	Normal	Ataxia, festination, appears like dancing
Movement	Normal	Tremor, chorea, dyskinesia
Verbal Output	Normal	Dysarthria, hypophonic, weak voice volume
Language	Abnormal, paraphasia, anomia	Normal
Cognition	Abnormal (unable to manipulate knowledge)	Deteriorated (dilapidated)
Memory	Abnormal (learning impairment)	Forgetful (retrieval impairment)
Visuo-Spatial Ability	Abnormal (constructional impairment)	Clumsy (movement impairment)

Emotional State	Abnormal (indifferent, unaware)	Abnormal (lack of motivation/drive)
Examples	Alzheimer's disease, Pick's disease	Progressive Supranuclear Palsy, Parkinson's disease, Wilson's disease, Huntington's disease

Table 2. Classification of dementia based on etiology Irreversible

Degenerative primary
- Alzheimer's disease
- Pick's disease
- Huntington's disease
- Parkinson's disease
- Olivopontocerebellar degeneration
- Progressive supranuclear palsy
- Cortical-basal ganglionic degeneration
Infection
- Creutzfeldt-Jakob disease
- Sub-acute sclerosing panencephalitis
- Progressive multifocal leukoencephalopathy
Metabolic
- Metachromatic leukodystrophy
- Kuf disease
- gangliosidoses

Table 3. Classification of dementia based on etiology Irreversible Reversible

Drugs	anticholinergics (e.g., atropine and similar); anticonvulsants (e.g., phenytoin, barbiturates); antihypertensives (clonidine, methyldopa, propranolol); psychotropics (haloperidol, phenothiazine); etc. (e.g., quinidine, bromide, disulfiram).
Metabolic-systemic disorders	Electrolyte or acid-base disturbances; hypo-hyperglycemia; severe anemia; polycythemia vera; hyperlipidemia; liver failure; uremia; pulmonary insufficiency; hypopituitarism; thyroid, adrenal, or parathyroid dysfunction;

	cardiac dysfunction; hepatolenticular degeneration.
Intracranial disorders	Cerebrovascular insufficiency; chronic meningitis or encephalitis, neurosyphilis, epilepsy, tumor, abscess, subdural hematoma, multiple sclerosis, normal pressure hydrocephalus.
Deficiency State	Vitamin B12, folate deficiency, pellagra (niacin).
Collagen-vascular disorders	Systemic lupus erythematosus, temporal arteritis, sarcoidosis, Behcet's syndrome.
Exogenous intoxication	Alcohol, carbon monoxide, organophosphates, toluene, trichlorethylene, carbon disulfide, lead, mercury, arsenic, thallium, managenese, nitrobenzene, anilines, bromide, hydrocarbons.

Risk factors for dementia include advanced age, family history, head injury, obesity, hypertension, smoking, diabetes, and low education levels.

Signs and symptoms

a. Memory Loss

An early sign experienced by seniors with dementia is forgetting newly acquired or learned information. This is a common occurrence for seniors with dementia, such as forgetting given directions, names, and phone numbers. Dementia sufferers will often forget objects and not remember them.

b. Difficulty Performing Routine Work

Seniors with dementia will often have difficulty completing daily routines. Seniors with dementia, especially those with Alzheimer's disease, may not understand the steps involved in preparing for daily activities such as preparing meals, using household appliances, and pursuing hobbies.

c. Language Problems

Seniors with dementia will have difficulty using appropriate words, using unfamiliar words, and often constructing sentences that are difficult for others to understand.

d. Disorientation of Time and Place

While it is common for people without dementia to forget the day or where they are, seniors with dementia may forget their way, forget where they are and how they got there, and may not know how to get home.

e. Inability to make decisions

Seniors with dementia are unable to make perfect decisions all the time, such as choosing clothes regardless of the weather or wearing the wrong clothes, or managing finances.

a. Mood and Personality Changes

Everyone can experience mood swings, from sadness to happiness, or emotional changes from time to time. However, older adults with dementia can exhibit rapid emotional changes, such as crying and anger for no apparent reason. Personality changes with age, but older adults with dementia can



experience many personality changes, such as fear, excessive suspicion, confusion, and dependence on family members.

Dementia Stage

a. Early Stage

In the early stages, dementia symptoms often go unrecognized because they are considered a normal part of the aging process. Sufferers begin to experience language difficulties and memory decline, especially for new information. Disorientation begins to occur, and individuals may even become lost in previously familiar environments. Individuals also begin to experience difficulty making decisions, lose initiative and motivation, and exhibit symptoms of depression and mild aggressive behavior. Furthermore, interest in previously enjoyed activities and hobbies tends to decline.

b. Middle Stage

In this stage, memory impairment becomes more severe, both for current and past events. Sufferers easily forget people's names or recent events and begin to lose the ability to perform daily activities such as cooking, cleaning, or shopping. Dependence on others increases, accompanied by a decline in verbal communication skills. Patients typically require assistance with personal hygiene and often wander aimlessly. Behavioral changes and personality disorders begin to emerge, necessitating closer supervision.

c. Final Stage

In the final stage, dementia sufferers experience a total lack of independence and are very passive. Personal disorientation worsens, to the point where patients don't recognize themselves or those closest to them. Their ability to understand and assess their surroundings is severely impaired, even making it impossible to find their way around their own home. Difficulty walking becomes apparent and is often accompanied by urinary and fecal incontinence. Most patients at this stage are completely bed- or wheelchair-dependent for mobility and require total assistance with all aspects of self-care.

Pathophysiology

Degenerative brain diseases, vascular disorders, and other conditions, as well as nutritional, metabolic, and toxic disorders, can directly or indirectly damage neuronal cells through ischemia, infarction, inflammation, and abnormal protein deposition, resulting in decreased neuronal numbers and impaired cortical and subcortical function. Furthermore, neurotransmitter levels in the brain, which are essential for nerve conduction, are also reduced. This leads to impaired cognitive function (memory, thinking, and learning), sensory impairment (attention, awareness), perception, thought content, emotions, and mood. The specific functions affected depend on the location of the affected area (cortical or subcortical) and the underlying cause, as the manifestations can vary. These pathological conditions can trigger a state of acute confusional dementia.

Diagnosis

1. History and Physical Examination

A neurobehavioral history from the informant, including the onset, pattern of changes in cognitive and non-cognitive domains, and the course of the disease, is important in determining the presence or



absence of dementia. A general medical history, neurology, psychiatric history, medication history, and family history are necessary to determine underlying diseases or medical conditions associated with dementia.

2. Physical Examination
 - a. General Physical Examination
 - b. Neurological Examination
 - c. Cognitive/Functional Examination
 - d. AD8-INA: Ascertain Dementia 8 Questionnaire
 - e. MMSE: measurement of general cognitive function
 - f. MoCA-INA: more sensitive to mild impairment
 - g. Clock Drawing Test: for low-education populations

Diagnostic Criteria:

Based on the 2011 recommendations of the National Institute on Aging and the Alzheimer's Disease Association workgroup, a diagnosis is made when cognitive and behavioral (neuropsychiatric) symptoms are present that:

1. Interfere with functional ability in work or daily activities;
2. Represent a decline from a previous level of functioning and performance; and
3. Cannot be attributed to delirium or a major psychiatric disorder;
4. Cognitive impairment is detected and diagnosed through a combination of:
 - a. Obtaining a medical history from the patient and informants familiar with the patient's condition; and
 - b. Objective cognitive assessment, either through a bedside mental status examination or neuropsychological testing. A complete neuropsychological test is necessary when a routine medical history and bedside mental status examination cannot provide a conclusive diagnosis.
5. Cognitive and behavioral impairments encompass at least two of the following domains:
 - a. Impaired ability to acquire and retain new information.
 - b. Impaired logic and complex task handling, poor decision-making.
 - c. Impaired visuospatial abilities.
 - d. Impaired language function (speaking, reading, and writing).
 - e. Disturbances in personality, behavior, or appearance.

Supporting Examinations

1. Monitoring the progression and severity of dementia
 - a. Mini Mental State Examination (MMSE)
 - b. Clinical Dementia Rating (CDR)
 - c. Global Deterioration Scale
2. Detecting non-cognitive symptoms
 - a. Geriatric Depression Scale (GDS)
 - b. Neuropsychiatric Inventory (NPI)
3. Laboratory Tests for Comorbidities



- a. Routine hematology tests (Hb, Hematocrit, Leukocytes, Platelets, Differential Count, Erythrocyte Sedimentation Rate)
- b. Biochemical tests including electrolytes, glucose, renal and liver function tests
- c. Thyroid function tests
- d. Serum vitamin B12 levels
4. Neuroimaging
 - a. Structural Imaging: CT Scan and MRI
 - b. Functional Imaging: MRS, PET, and SPECT
 - c. Additional Examinations
 - d. EEG, cerebrospinal fluid, TPHA/VDRL tests, HIV testing if clinically indicated

Management

1. Pharmacological Cognition-Enhancing Therapy

a. Mild and moderate Alzheimer's dementia

Cholinesterase inhibitors

- a) Donepezil. Initial dose: 2.5-5 mg once. Increase every 4-8 weeks until reaching 10 mg once.
- b) Rivastigmine patch. Initial dose: 4.6 mg/24 hours, increase to
- c) 9.5 mg/24 hours after 4 weeks.
- d) Galantamine. Initial dose: 4 mg twice, increase after 4 weeks to 8 mg tablets twice or 16 mg PR capsule once.
- e) Side effects: Nausea, vomiting, diarrhea, and bradycardia have been reported.

Alternative therapies

- a) Ginkgo Biloba Extract 761 (EGB761). Dose: 120 mg twice.

b. Moderate and severe Alzheimer's dementia

- a) Donepezil.
- b) MND A receptor antagonist: Memantine. Initial dose: 5 mg once daily, increase by 5 mg weekly to 10 mg twice daily.

c. Vascular Dementia

- a) Cholinesterase inhibitors.
- b) Control of vascular risk factors.

d. Lewy Body Dementia

- a) Cholinesterase inhibitors, especially rivastigmine.

2. Pharmacological Therapy for Non-Cognitive Symptoms

a. Agitation, aggression, and psychosis.

- a) Cognitive enhancers.
- b) Cholinesterase inhibitors.
- c) MDA receptor antagonist memantine.
- d) Antipsychotics should not be used routinely.
- e) If symptoms are severe, have no clear trigger, or occur in situations where the family cannot cope with serious behavioral symptoms that are harmful to the patient or family, antipsychotic medication may be considered.

- f) Therapy should have a specific target, titrated starting with a low dose over a limited time, usually not exceeding 3 months.
- g) If indicated, consider administering an atypical antipsychotic.
 - Risperidone, average dose 1 mg/day
 - Olanzapine, average dose 4 mg/day
- h) Families should be informed about the side effects of serious cerebrovascular complications, falls, and extrapyramidal symptoms.

b. Depression and Mood Disorders

a) SSRI Antidepressants

3. Non-Pharmacological Interventions

a. Maintaining Function

- 1) Enhancing Independence: Communication Strategies, ADL Skills Training, Activity Planning, Assistive Technology such as Telephone Adaptive Aids, Exercise, Rehabilitation Programs, and Combination Interventions.
 - 2) Maintaining Cognitive Function: Cognitive Stimulation, Cognitive Training, Cognitive Rehabilitation, Reality Therapy, and Reminiscence Therapy.
- ### b. Managing Behavioral Changes - Agitation, Aggression, and Psychosis
- 1) Behavioral Management Approach
 - 2) Music Therapy

Table 4. Dosage and Drug Preparation Information

Nama Generik	Sediaan	Dosis Anjuran
Setraline	Tab 50 mg	50-150 mg/hari
Paoxetine	Tab 20 mg	20-50 mg/hari
Fluvoxamine	Tab 20 mg	10-40 mg/hari
Fluoxetine	Tab 20 mg	10-40 mg/hari
Citalopram	Tab 20 mg	10-60 mg/hari

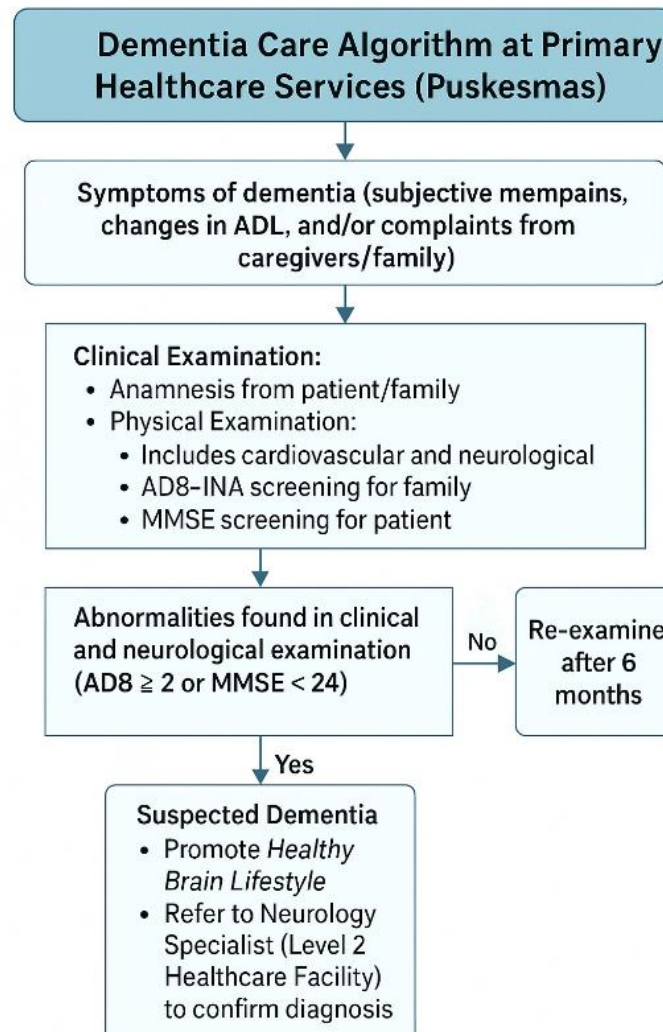


Figure 4. Dementia Care Algorithm in Primary Health Care

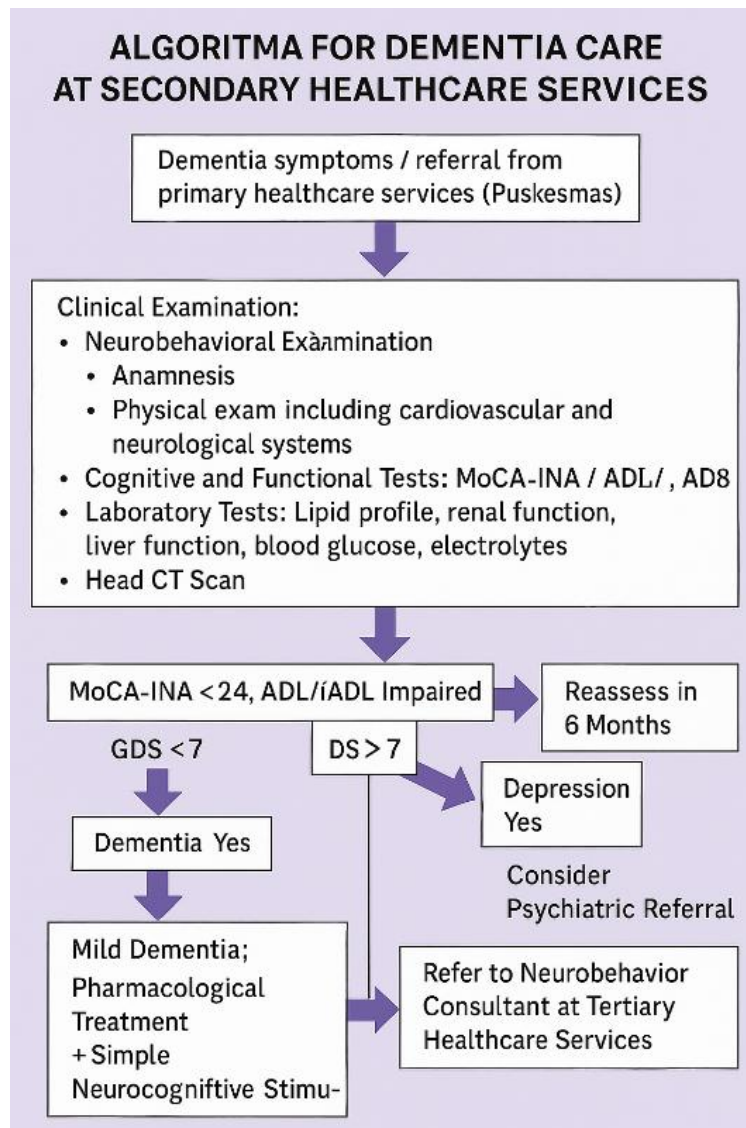


Figure 5. Dementia Care Algorithm in Secondary Healthcare

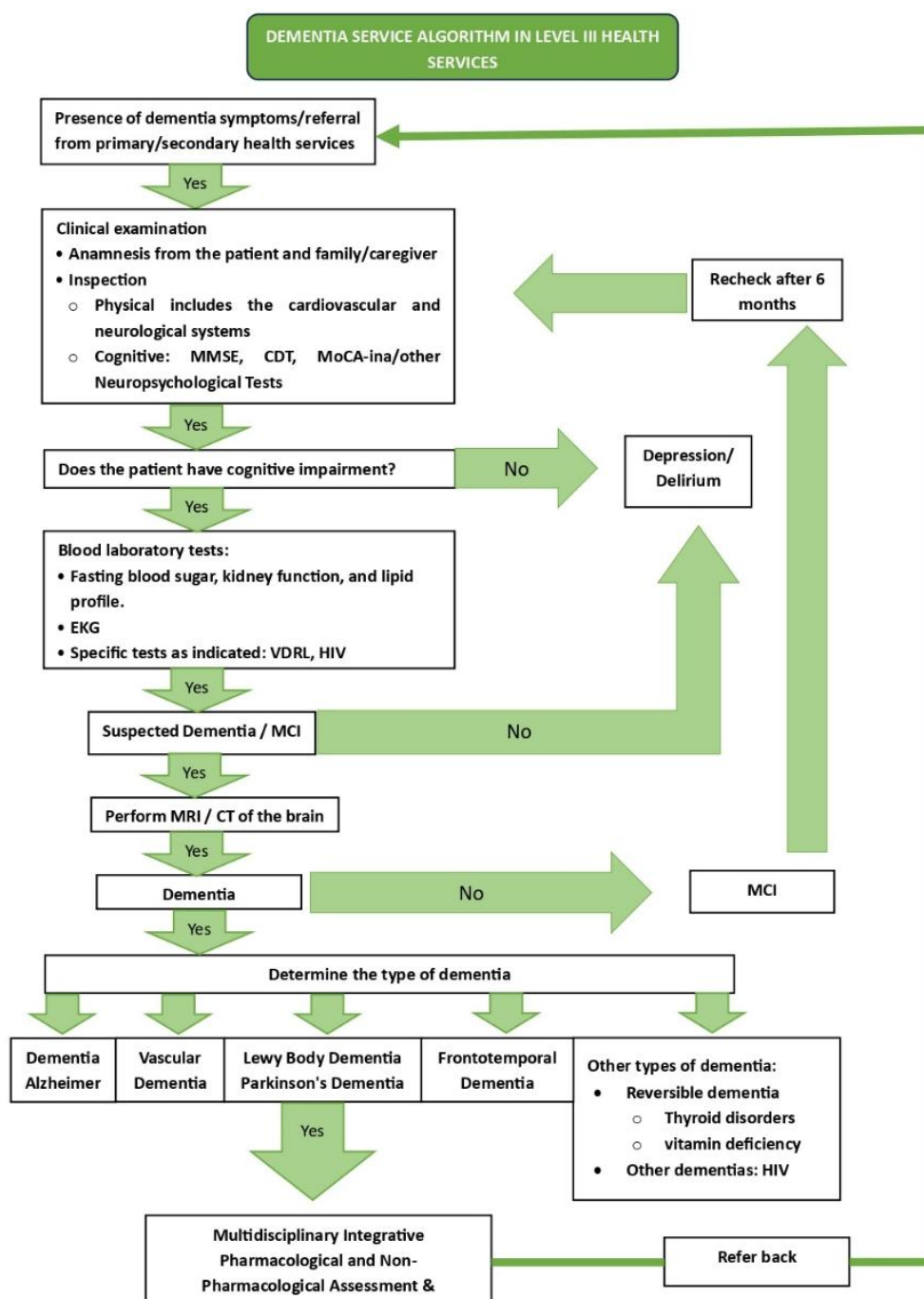


Figure 6. Dementia Service Algorithm in Level III Health Services

CONCLUSIONS

Dementia is a syndrome characterized by a significant decline in intellectual function compared to the previous condition. This decline is severe enough to affect an individual's ability to optimally carry out social and professional activities. These symptoms are often accompanied by marked behavioral changes, such as apathy, aggressiveness, or confusion, not caused by delirium or other major psychiatric disorders. The impact of dementia is evident in activities of daily living, such as difficulty caring for oneself, forgetting appointments, or getting lost in familiar places. To detect dementia early, various simple yet effective cognitive screening tools are available. These tests include the AD8-INA, the Mini Mental State Examination (MMSE), the Clock Drawing Test (CDT), and the Indonesian version of the Montreal Cognitive Assessment (MoCA-INA). Each instrument has its own advantages in assessing various cognitive domains such as memory, orientation, attention, and visuospatial function. These tests are important for determining the severity of dementia and assisting in planning appropriate treatment for the patient. Dementia management aims to slow disease progression, improve quality of life, and maintain the patient's independence for as long as possible. Commonly used pharmacological therapies include donepezil and rivastigmine, which act as cholinesterase inhibitors to improve neurotransmission. In addition to medication, non-pharmacological interventions are also important, such as cognitive stimulation, occupational therapy, and psychosocial approaches to support the patient's mental and emotional functioning. A holistic approach involving family and the surrounding community is essential to creating a sustainable support system for people with dementia. State the contributing parties or institutions which help the author's research. It is important to acknowledge those who support the authors in funding, research facilities, or meaningful suggestions in improving the author's article. If the article has been presented in a seminar or conference, the authors can also mention them in this section.

REFERENCES

- Ahmad, M., Kareem, O., Khushtar, M., Akbar, M., Haque, M., Iqbal, A., Haider, M., Pottoo, F., Abdulla, F., Al-Haidar, M., & Alhajri, N. (2022). Neuroinflammation: A Potential Risk For Dementia. *International Journal Of Molecular Sciences*, 23(2), 616. <https://doi.org/10.3390/Ijms23020616>
- Aranda, M. P., Kremer, I. N., Hinton, L., Zissimopoulos, J., Whitmer, R. A., Hummel, C. H., Trejo, L., & Fabius, C. D. (2021). Impact Of Dementia: Health Disparities, Population Trends, Care Interventions, And Economic Costs. *Journal Of The American Geriatrics Society*, 69(7), 1774–1783. <https://doi.org/10.1111/Jgs.17345>
- Basri, S. H. (2020). Gambaran Karakteristik Demensia Dan Tingkat Kemandirian Pasien Demensia Di Rs Błasczyk, J. W. (2022). Pathogenesis Of Dementia. *International Journal Of Molecular Sciences*, 24(1), 543. <https://doi.org/10.3390/Ijms24010543>
- Broyles, I., Li, Q., Palmer, L., Dibello, M., Dey, J., Oliveira, I., & Lamont, H. (2023). Dementia's Unique Burden: Function And Health Care In The Last 4 Years Of Life. *The Journals Of Gerontology: Series A, Biological Sciences And Medical Sciences*. <https://doi.org/10.1093/Gerona/Glad003>
- Chouliaras, L., & O'Brien, J. T. (2023). The Use Of Neuroimaging Techniques In The Early And Differential Diagnosis Of Dementia. *Molecular Psychiatry*, 28, 4084–4097. <https://doi.org/10.1038/S41380-023-02215-8>



- Davis, D. H. J., Creavin, S. T., Yip, J. L. Y., Noel-Storr, A. H., Brayne, C., & Cullum, S. (2021). Montreal Cognitive Assessment For The Detection Of Dementia. *Cochrane Database Of Systematic Reviews*, 2021(7), CD010775. <https://doi.org/10.1002/14651858.CD010775.Pub3>
- Dewi VT, Agung A, Laksmidewi AP. Manifestasi Klinis Dan Gambaran Pencitraan Struktural Dan Fungsional Berbagai Subtipe Demensia. *CDK*. 2023;50(11):594–9.
- Fong, T. G., & Inouye, S. K. (2022). The Inter-Relationship Between Delirium And Dementia: The Importance Of Delirium Prevention. *Nature Reviews Neurology*, 18, 579–596. <https://doi.org/10.1038/S41582-022-00698-7>
- Koros, C., Stefanis, L., & Scarmeas, N. (2021). Parkinsonism And Dementia. *Journal Of The Neurological Sciences*, 433, 120015. <https://doi.org/10.1016/J.Jns.2021.120015>
- Kumalasari, A. N., Rahmayani, F., & Hamidi, S. (2018). Diagnosis Dan Pencegahan Perburukan Demensia Vaskular Pada Pasien Pasca Stroke. *Jurnal Medula*, 8(1), 25–32.
- Kwentus, J., Hart, R., Lingon, N., Taylor, J., & Silverman, J. (2020). Alzheimer's Disease. *The American Journal Of Medicine*, 81(1), 91–96. <https://doi.org/10.1093/Med/9780199644957.003.0033>
- Macoir, J. (2021). Dementia And Language. *Oxford Bibliographies In Linguistics*. <https://doi.org/10.1093/Obo/9780199772810-0275>
- Malaha, A., Jönsson, L., Seeher, K., Dua, T., Dieleman, J., Frisell, O., Cyhlarova, E., Nichols, E., Pedroza, P., Guerchet, M., Cataldi, R., Prince, M., Wimo, A., & Knapp, M. (2023). The Worldwide Costs Of Dementia In 2019. *Alzheimer's & Dementia*, 19(12), 2865–2873. <https://doi.org/10.1002/Alz.12901>
- Mehta, R. I., & Schneider, J. A. (2021). What Is 'Alzheimer's Disease'? The Neuropathological Heterogeneity Of Clinically Defined Alzheimer's Dementia. *Current Opinion In Neurology*, 34(2), 237–245. <https://doi.org/10.1097/WCO.0000000000000912>
- Muliani, N. (2019). Pengaruh Pemberian Terapi Kenangan (Reminiscence Therapy) Terhadap Fungsi Kognitif Pada Lansia Di Pondok Lansia Al- Ishlah Malang (Doctoral Dissertation, Poltekkes RS Dr. Soepraoen).
- Nordestgaard, L. T., Christoffersen, M., & Frikke-Schmidt, R. (2022). Shared Risk Factors Between Dementia And Atherosclerotic Cardiovascular Disease. *International Journal Of Molecular Sciences*, 23(17), 9777. <https://doi.org/10.3390/Ijms23179777>
- Oh, E. S. (2024). Dementia. *Annals Of Internal Medicine*, 177(3), ITC161–ITC176. <https://doi.org/10.7326/ANNALS-24-02207>
- Panduan Praktik Klinik Diagnosis Dan Penatalaksanaan Demensia. (2015). Perhimpunan Dokter Spesialis Saraf Indonesia.
- Quinn C, Toms G, Rippon I, Nelis SM, Henderson C, Morris RG, Et Al. Positive Experiences In Dementia Care-Giving: Findings From The IDEAL Programme. *Ageing Soc*. 2024 May 29;44(5):1010–30
- Sidarta E, Sari T, Mariyati S, Nataprawira D. Demensia: Patofisiologi, Faktor Resiko Dan Peran Inflamasi Dalam Perkembangan Penyakit. *Jurnal Ilmiah Ilmu Kesehatan Dan Kedokteran*. 2025;3(1):235–44.
- Tarulli, A. (2020). Dementia. In *Neurology* (Pp. 65–84). Springer. https://doi.org/10.1007/978-3-030-55598-6_4
- Testo, A., Roundy, G., & Dumas, J. (2024). Cognitive Decline In Alzheimer's Disease. *Current Topics In Behavioral Neurosciences*. https://doi.org/10.1007/7854_2024_527
- Wahidin Sudirohusodo (Doctoral Dissertation, Universitas Hasanuddin).





Journal of Public Health Indonesian

Volume.02 Issue.02, (July, 2025) Pages 59-75

E-ISSN : 3048-1139

DOI : 10.62872/2k2n2s87

<https://nawalaeducation.com/index.php/JHH>

Yang P, Bi G, Qi J, Wang X, Yang Y, Xu L. Multimodal Wearable Intelligence For Dementia Care In Healthcare 4.0: A Survey. Information Systems Frontiers. 2021;27:197–214.

