AUCTORES
Globalize your Research

Journal of Neuroscience and Neurological Surgery
Michel Bourin *

Open Access

Short Communication

Diagnosis and Treatment of Depression in the Elderly

Michel Bourin

Neurobiology of Anxiety and Mood Disorders, Nantes University, 98 rue Joseph Blanchart, 44100 Nantes, France.

***Corresponding Author:** Michel Bourin, Neurobiology of Anxiety and Mood Disorders, Nantes University, 98 rue Joseph Blanchart, 44100 Nantes, France.

Received date: February 20, 2026; Accepted date: February 26, 2026; Published date: March 10, 2026

Citation: Michel Bourin, (2026), Diagnosis and Treatment of Depression in the Elderly, *J. Neuroscience and Neurological Surgery,* 19(2); **DOI:10.31579/2578-8868/403**

Abstract

Background:

Depression frequently impacts older adults, yet it often goes unnoticed, significantly affecting their overall health and quality of life. Unlike in younger individuals, depression in the elderly may show up as physical complaints, cognitive problems, or anxiety, which complicates diagnosis due to similarities with other medical or age-related issues.

Methods:

This review highlights recent findings on how often depression occurs among older adults, its symptoms, challenges in identifying it, and current treatment options. It also examines connections with dementia, suicide risk, and available therapies.

Results:

Depression in older adults is frequently overlooked because its symptoms can be unusual or may coincide with other medical or cognitive problems. Depression late in life is closely linked to an increased likelihood of disability, higher suicide rates, and a greater chance of developing dementia. Research indicates that psychotherapy, medication, and electroconvulsive therapy can be effective treatments. Nonetheless, it is important to tailor treatment plans to reflect everyone's physical changes and present health status.

Conclusions:

Better recognition and personalized treatment approaches for depression in older adults can notably improve outcomes, reduce suffering, and help prevent suicide. Greater awareness among healthcare professionals and routine use of screening and evidence-based treatments are crucial for tackling this urgent public health problem.

Keywords: late-life depression, elderly; diagnosis; treatment; psychotherapy; pharmacotherapy; electroconvulsive therapy; dementia; suicide prevention

Introduction

The World Health Organization (WHO) now reports that unipolar depression is the leading cause of illness and disability across the globe, affecting about 16% of people at some point in their lives. In older adults, depression rates are even higher ranging from 20.3% in those with normal cognition to 65.1% in individuals with dementia [2]. Depression later in life brings serious declines in quality of life, greater dependence, increased use of healthcare services, and a greater risk of early death, especially from heart disease and suicide [3,4]. Although depression significantly affects both individuals and society, it frequently goes undiagnosed and untreated in older adults. This often happens when depression shows up with physical symptoms instead of emotional ones, leading it to being confused with other illnesses or just considered part of getting older. Using only benzodiazepines to treat anxiety-related symptoms without addressing underlying depression can further mask the problem and introduce additional dangers, such as cognitive decline, falls, and dependency [6]. Diagnosing depression in older adults is even harder due to widespread multimorbidity, overlapping cognitive decline, multiple medications, and stressors like bereavement, loss of independence, or financial hardship [7]. Importantly, depressive symptoms in older adults are frequently mistaken for a normal aspect of aging, which can result in postponing or missing out on appropriate treatment [8]. Many older patients do not directly report feeling depressed, instead of coming to doctors with vague physical complaints, tiredness, or memory issues that can hide an underlying mood disorder.

Neurobiological changes associated with aging may also alter the clinical expression of depression, reduce the prominence of classical features such as sadness or guilt and increase the prevalence of psychomotor

retardation, anxiety, and cognitive symptoms. Notably, untreated depression in this population confers a substantial risk of suicide, particularly among older men a demographic with among the highest suicide rates globally [9].

Given its high prevalence, diagnostic complexity, and profound consequences, late-life depression warrants focused clinical attention. Timely diagnosis and appropriate management including psychotherapy, pharmacotherapy, and electroconvulsive therapy can significantly reduce morbidity and improve functional outcomes. This review examines the distinctive clinical features, diagnostic challenges, epidemiological context, and therapeutic approaches relevant to depression in the elderly.

Definition of a Major Depressive Episode and Specific Features in Older Adults

The diagnosis of a major depressive episode is clinical and relies on standardized criteria, primarily those outlined in the International Classification of Diseases, 11th Revision (ICD-11), and the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [10,11]. Both classifications require core symptoms: persistent low mood and/or anhedonia every day for at least two weeks, leading to significant distress or impairment.

Major depressive episodes, as defined by standard diagnostic criteria, require the presence of at least five symptoms over a two-week period, including either depressed mood or loss of interest or pleasure. Additional symptoms may include significant weight change, sleep disturbances, psychomotor changes, fatigue, feelings of worthlessness or excessive guilt, diminished concentration, and recurrent thoughts of death or suicide. In older adults, it is crucial to recognize that these symptoms may present differently, with somatic complaints or cognitive impairment sometimes overshadowing mood-related indicators. Careful assessment is therefore essential to differentiate depression from medical comorbidities and age-related cognitive decline. Severity is mild, moderate, or severe based on the number, intensity, and impact of symptoms on daily life.

In older adults, however, the clinical presentation often diverges from that seen in younger individuals. Classical affective symptoms such as sadness and guilt may be less prominent or even absent, contributing to under-recognition. The common assumption that sadness, pessimism, or social withdrawal are normative aspects of aging is erroneous and may delay diagnosis [12].

Depression in the elderly frequently manifests through nonspecific or somatic complaints, including chronic fatigue, cognitive concerns, feelings of loneliness, diffuse physical pain, unexplained weight loss, and gastrointestinal symptoms. Additional warning signs may include refusal of food or medication, neglect of personal hygiene, and increased consumption of alcohol or benzodiazepines (13). Symptom presentations are heterogeneous and may include psychomotor retardation, marked anxiety, or delusional themes related to incurability, harm, or financial ruin. In “masked” depressions, behavioral disturbances irritability, hostility, regression, hypochondriasis—can obscure underlying affective symptoms.

Cognitive impairment is common and may precede, accompany, or follow depressive episodes. These cognitive symptoms are associated with poorer treatment response and worse functional outcomes (13). Depression also co-occurs frequently with neurological disorders such as stroke, Parkinson’s disease, and dementia, making it challenging to distinguish mood-related symptoms from those of neurodegenerative disease.

Cerebrovascular disorders have been associated with cases of depression that begin after the age of 65. Subcortical white matter lesions may disrupt fronto-subcortical circuits involved in mood regulation, contributing to the subtype known as “vascular depression” (16). These patients often present with executive dysfunction and have comorbid cardiovascular risk factors, including hypertension, dyslipidemia, and atrial fibrillation [17]. This neurovascular hypothesis highlights the importance of evaluating underlying medical and neurological conditions in the assessment and management of depressive symptoms in late life.

Epidemiological Data

Epidemiological findings in late-life depression vary widely due to differences in diagnostic criteria, assessment tools, and study designs [18]. The absence of a universally accepted definition of depression in older adults further complicates prevalence estimates. Evidence also suggests that symptom profiles may differ significantly from those in younger populations, potentially representing clinical subtypes influenced by age-related neurobiological changes.

Depression is consistently underdiagnosed and undertreated in this population, with 60%–70% of cases going unrecognized. The prevalence of major depressive episodes in community-dwelling older adults ranges between 1% and 4%. Broader estimates including minor and subthreshold depression—range from 8% to 16% in individuals aged ≥65, rising to 12%–15% in those over 85 years.

Recent research also highlights the impact of social factors on the development and course of depression in older adults. Social isolation, bereavement, and loss of meaningful roles after retirement can exacerbate vulnerability to depressive episodes. Additionally, cultural attitudes towards mental health and aging may influence whether individuals seek help, potentially contributing to under-recognition and undertreatment. Recognizing these contextual factors is essential for developing comprehensive prevention and intervention strategies tailored to the unique needs of the elderly population.

Rates are significantly higher in institutionalized settings, ranging from 10% to 45%, depending on assessment method. In primary care, 15%–30% of elderly patients present with clinically significant depressive symptoms, yet many remain undiagnosed. Among elderly psychiatric inpatients, prevalence may reach 35% [19].

Semiology of Depression in Older Adults

Although core depressive symptoms occur across all age groups, their expression in older adults is often atypical or muted. Somatic complaints frequently predominate and may obscure the underlying mood disorder [20]. Older adults may report low mood; however, anhedonia is often the more reliable diagnostic marker. Additional affective symptoms include pervasive fatigue, apathy, hopelessness, self-directed anger, and pessimism. Although a reduction in interests may be a normal aspect of aging, diminished enjoyment in fundamental activities such as eating warrants assessment for potential depression (21). Psychomotor retardation is common but can be difficult to assess because of age-related mobility limitations. Patients frequently report difficulties with concentration, slowed thinking, and altered perception of time. Somatic symptoms gastrointestinal complaints, musculoskeletal pain, cardiovascular symptoms, headaches are highly prevalent (22). Fatigue is one of the most disabling symptoms. Hypochondriacal concerns often focus on cardiovascular, urinary, or gastrointestinal systems and may become delusional in severe cases, such as Cotard’s syndrome (23).

Cognitive disturbances frequently accompany depressive symptoms and complicated differentiation from early dementia (24). Depression impairs attention, encoding, retrieval, and explicit memory, whereas implicit memory typically remains preserved. Unlike patients with Alzheimer’s disease, who often lack awareness of deficits, depressed patients may express deep concern about memory decline (25).

Sleep disturbances and anxiety are common. Anxiety is often severe, pervasive, and without clear external triggers. Behavioral manifestations restlessness, moaning, irritability, aggression—may be distressing for caregivers (26). Additional presentations include phobic symptoms, functional neurological symptoms (conversion), food refusal, social withdrawal, mutism, and substance misuse (27).

Suicidal ideation is common but frequently overlooked. Older adults have a suicide rate more than twice that of the general population, with the highest rates among men over 85 years [28]. Clinicians must systematically inquire about suicidal thoughts.

Although reductions in libido are common with age, a sudden decline in sexual interest should prompt evaluation for depression [29].

Diagnostic Challenges in Late-Life Depression

Furthermore, the diagnostic process is complicated by the tendency for both patients and health professionals to attribute depressive symptoms to physical illness or normal aging, rather than recognizing them as a distinct mental health disorder. This misattribution can delay appropriate intervention and exacerbate the severity of depression. The lack of standardized screening protocols in many healthcare settings also contributes to underdiagnosis, as subtle presentations may be missed during routine assessments. Late-life depression is frequently underdiagnosed and insufficiently treated [30]. Approximately 80% of initial presentations occur in primary care settings, yet only 4%–14% of older adults with depressive symptoms receive a formal diagnosis, despite 15%–30% presenting with clinically relevant symptoms [31].

A key barrier is the persistent misconception that depression is a normal part of aging [32]. Additional diagnostic challenges include:

-High prevalence of somatic comorbidities with overlapping symptoms (fatigue, anorexia, sleep disturbances, psychomotor slowing)

-Adverse effects of polypharmacy mimicking depressive symptoms [33]

-Cognitive impairment limiting communication

-Atypical symptom presentation

-Stigma reducing disclosure of emotional distress

Clinicians must maintain a high index of suspicion when somatic or affective complaints appear disproportionate to situational stressors or when treatment responses are inadequate. Early detection and intervention are crucial to reducing morbidity, functional decline, and mortality [34].

Depression and Dementia: Diagnostic and Clinical Interactions

Distinguishing between depression and dementia in older adults is particularly challenging [35]. Late-life depression is increasingly recognized as both a risk factor for dementia and a prodromal symptom, especially for Alzheimer's disease and vascular dementia [36]. Conversely, depressive symptoms are common in various dementia syndromes, including Parkinson's disease dementia, dementia with Lewy bodies, frontotemporal dementia, and Alzheimer's disease [37].

Shared neuroanatomical substrates, including disruptions in fronto-subcortical circuits, cerebral atrophy, periventricular ischemia, and white matter lesions, contribute to overlapping clinical features [38].

Patients with dementia typically show executive and short-term memory deficits, often accompanied by anosognosia. Patients experience intermittent mood changes but still find pleasure in activities. Antidepressants do not improve cognitive function in these cases (39).

Accurate differentiation between depressive and dementing disorders is crucial for guiding treatment and prognosis. Clinicians should pay close attention to symptom chronology, the presence of neurovegetative signs, and response to therapeutic interventions. Collaboration with caregivers and informants often clarifies subtle cognitive or mood changes, aiding diagnosis.

Depressive pseudodementia is a condition caused by depression that leads to significant problems with cognition, such as difficulties in paying attention and concentrating. These symptoms set it apart from other types of cognitive impairment. Symptoms such as low mood (often worse in the morning), anhedonia, sleep disruption, and appetite changes are common. Cognitive impairment typically improves with antidepressant treatment, helping differentiate it from neurodegenerative disorders (40).

Longitudinal follow-up and comprehensive neuropsychological assessment are often necessary to establish an accurate diagnosis.

Vascular Depression

Forty years ago, post-stroke depression was considered the only true form of depression in older adults. The concept of vascular depression has since gained acceptance as a distinct subtype arising within two years of a cerebrovascular event or in association with chronic ischemic lesions.

Lesions in the left prefrontal cortex and other regions involved in mood regulation are associated with increased prevalence and greater severity of depression, as well as poorer response to conventional antidepressants [43]. Chronic vascular lesions often correlate with psychomotor retardation, anhedonia, and functional decline, with fewer psychotic features or guilt-related themes.

Frontal lobe involvement frequently leads to dysexecutive syndrome characterized by impaired planning, problem-solving, and cognitive flexibility accompanied by marked apathy and psychomotor slowing, with less overt sadness [44].

Suicide Risk

Suicide is the ninth leading cause of death among individuals aged 65–84. Although older adults attempt suicide less frequently than younger individuals, the lethality of attempts is markedly higher, with a completion ratio of approximately 4:1 compared to 200:1 in individuals under 25 [45].

Elderly men, especially those over eighty-five, exhibit the highest suicide mortality rates, partly due to the use of more lethal methods. Approximately 75% of suicide deaths occur during the first depressive episode, and 60% of individuals have seen a healthcare professional within the month prior to suicide [46].

Risk factors include insomnia, hopelessness, agitation, psychosis, alcohol use, chronic pain, terminal illness, social isolation, and previous suicide attempts[48]. Neurobiological changes in the aging brain, particularly prefrontal cortex alterations, may increase vulnerability [47].

Early detection and initiative-taking management of depression are essential to reducing suicide-related mortality.

Treatments for Depression in the Elderly

Management of late-life depression requires a multimodal approach involving psychotherapy, pharmacotherapy, and electroconvulsive therapy (ECT) [49]. Treatment selection depends on symptom severity, comorbidities, access to care, and patient preference.

Psychotherapy

Psychotherapy is the preferred first-line treatment for mild to moderate depression in older adults. Mobility limitations and logistical challenges may impede access. Psychotherapeutic interventions aim to reduce symptoms, improve lifestyle, and decrease social isolation. Physical activity has also shown antidepressant benefits [50].

Combined psychotherapy and pharmacotherapy produce superior outcomes compared to monotherapy [51].

Pharmacological Treatments

Pharmacotherapy in older adults requires careful dosing because of age-related changes in pharmacokinetics and pharmacodynamics, including reduced renal and hepatic function, altered drug distribution, and polypharmacy interactions [52]. Monotherapy with short half-life agents is preferred.

Antidepressants:

Efficacy is like that seen in younger adults, but results may be less favorable if dosing is too low or treatment duration is insufficient [53]. The starting dose should be reduced by half and then increased

gradually. If no improvement occurs after four weeks, switching agents may be appropriate. Treatment should continue for at least 12 months after remission [54].

SSRIs:

First-line agents. Avoid fluoxetine (long half-life) and paroxetine (anticholinergic effects). Sertraline is often preferred. Monitor for hyponatremia, akathisia, parkinsonism, and bradycardia (55–57).

SNRIs:

Second-line agents (duloxetine, venlafaxine). Avoid uncontrolled hypertension or arrhythmias. Duloxetine is advantageous in comorbid neuropathic pain [58].

Tricyclic antidepressants (TCAs):

Reserved for resistant cases. Effective but limited by anticholinergic and cardiovascular risks [59].

Atypical antidepressants:

Mirtazapine is useful when sedation or weight gain is desired [60]. Bupropion can help with apathy and slow movement, and people with Parkinson's disease generally tolerate it well [61].

Augmentation strategies:

Atypical antipsychotics (aripiprazole, quetiapine, risperidone) may potentiate antidepressant effects [62]. Other augmentation options include olanzapine–fluoxetine combinations, thyroid hormones, lithium, and pramipexole [63,64].

Esketamine:

Effective for treatment-resistant depression, with similar outcomes in adults ≥65 years. Start at 28 mg and titrate to 84 mg. Contraindicated in recent cardiovascular events or cerebrovascular disease [66].

Depression in dementia:

While antidepressants may offer benefits, tricyclic antidepressants (TCAs) should be avoided because of their anticholinergic side effects. Despite available treatments, antidepressant efficacy in the elderly remains insufficiently documented, as few controlled trials include older adults [67,68]. A large proportion of cases are treated as treatment-resistant depression [69].

Selecting medications to treat depression in individuals with dementia should consider their cognitive abilities, existing health issues, and side effects. SSRIs, or selective serotonin reuptake inhibitors, are commonly prescribed since they usually have fewer side effects. However, it is important to monitor patients closely to prevent issues such as hyponatremia and falls. If depression is very serious or doesn't improve with first-line treatments, other drugs such as mirtazapine or bupropion might be considered. It is essential to keep track of how these drugs affect appetite, sleep patterns, and physical movement.

Non-pharmacologic interventions, such as structured psychotherapy and caregiver support, play a pivotal role in managing depression in patients with dementia. Approaches like cognitive-behavioral therapy, reminiscence therapy, and environmental modifications can reduce depressive symptoms and improve quality of life. It is crucial to involve family members and caregivers in the treatment plan, as their support can enhance adherence and facilitate early recognition of symptom changes.

Electroconvulsive Therapy (ECT)

ECT is highly effective in late-life depression, with higher remission rates than in younger adults. This approach is recommended for individuals experiencing severe, psychotic, or treatment-resistant depression, and when medication cannot be tolerated. ECT is safe even in individuals over eighty-five and those with cerebrovascular comorbidities. Maintenance ECT reduces relapse rates and avoids complications of polypharmacy (71).

Discussion

Depression in older adults is common, often presents atypically, and leads to increased morbidity, functional decline, and mortality. Despite its prevalence in primary and geriatric care, late-life depression is frequently overlooked and undertreated. The findings of this review highlight the complex and multifactorial nature of depression in the elderly, encompassing biological, psychological, and social determinants.

One of the principal challenges identified is the atypical symptomatology in older adults. Compared with younger populations, depressive episodes in later life are more likely to present with somatic complaints, cognitive impairment, psychomotor retardation, and anxiety, while sadness, guilt, or overt dysphoria may be less prominent. These differences contribute to diagnostic delays and misattribution of symptoms to normal aging or chronic medical conditions. Furthermore, cognitive symptoms complicate the distinction between depression, mild cognitive impairment, and early dementia. Increasing evidence supports the notion that late-life depression, particularly late-onset forms, is both a risk factor for and a prodrome of neurodegenerative disorders. Recognizing this bidirectional relationship is essential for both early intervention and longitudinal monitoring.

Another important theme emerging from literature is the role of vascular pathology in geriatric depression. The “vascular depression” hypothesis, supported by neuroimaging and clinical data, links cerebrovascular lesions particularly within frontostriatal circuits to depressive syndromes characterized by apathy, executive dysfunction, and reduced response to traditional antidepressants. This underscores the need for integrated management strategies that address both psychiatric and cardiovascular risk factors, including hypertension, diabetes, dyslipidemia, and atrial fibrillation.

Suicide risk remains a critical concern in this population. Older adults have the highest suicide completion rates of any age group, particularly men over 85. Disproportionate lethal methods, severe medical comorbidities, social isolation, and reduced help-seeking behaviors all contribute to this elevated risk. The fact that most older adults who die by suicide have had recent contact with healthcare services highlights the urgent need for improved screening, early diagnosis, and initiative-taking intervention.

Managing depression in older adults requires a personalized approach that considers changes in their bodies due to aging, multiple medications they may be taking, and other existing health issues. Psychotherapy remains a first-line intervention for mild to moderate depression, but access barriers including mobility limitations, sensory deficits, and caregiver dependence often reduce uptake. Pharmacotherapy is effective but requires careful dosing, slow titration, and vigilant monitoring for adverse effects such as hyponatremia, orthostatic hypotension, and cardiac conduction abnormalities. Selective serotonin reuptake inhibitors remain the preferred option, although alternative classes such as serotonin-norepinephrine reuptake inhibitors, mirtazapine, and bupropion may be appropriate depending on clinical features. In cases of treatment-resistant depression, augmentation strategies and newer therapies such as esketamine offer promising alternatives, although evidence in older adults remains limited.

Electroconvulsive therapy continues to demonstrate robust efficacy and safety in older populations. Unlike in younger adults, age is not a limiting factor and may even predict better treatment response. ECT is

recommended early when patients have psychotic depression, are at elevated risk of suicide, experience significant impairment in daily functioning, or cannot tolerate medication.

Overall, the literature emphasizes the importance of a comprehensive, multidisciplinary approach to the diagnosis and management of depression in older adults. The integration of medical, psychiatric, cognitive, and social assessments is key to improving outcomes. Future research should prioritize well-designed clinical trials involving older participants, particularly those with medical comorbidities and cognitive impairment, who remain underrepresented in current evidence. A better understanding of the neurobiological underpinnings of late-life depression, especially vascular and neurodegenerative mechanisms, may guide the development of more targeted and effective therapies.

Conclusion

Depression in older adults is a prevalent, complex, and often underdiagnosed condition that significantly affects quality of life, functional capacity, and mortality. Its atypical clinical presentation, frequent overlap with cognitive impairment, and high burden of medical comorbidities make early recognition particularly challenging. Effective management requires a comprehensive and individualized approach that integrates psychosocial, medical, and pharmacological strategies. Psychotherapy, appropriately selected antidepressants, and electroconvulsive therapy each play important roles, although treatment must be tailored to age-related physiological changes and the risks associated with polypharmacy. Additionally, addressing the stigma associated with mental health issues in older adults remains crucial. Many individuals may hesitate to seek help due to fear of being judged or concerns about burdening their families. Educational initiatives targeting both healthcare professionals and the public can help foster a more supportive environment, encouraging timely identification and treatment of depressive symptoms. Obstacles to achieving optimal care go beyond clinical or biological reasons; they also involve stigma, low levels of mental health literacy, and a lack of adequate training for healthcare professionals in identifying depression among older adults. Additionally, disparities in access to specialized geriatric mental health service particularly in rural or underserved areas further hinder timely identification and treatment.

In summary, depression in older adults is a multifaceted condition that demands vigilant recognition and tailored interventions. Timely identification, thorough assessment of contributing factors, and an individualized treatment plan encompassing both pharmacological and non-pharmacological strategies are crucial in reducing disease burden and improving quality of life. Collaboration among primary care, psychiatry, neurology, and social services remains essential to address the unique challenges faced by this population. Ongoing education for clinicians and caregivers, along with enhanced access to mental health resources, will further support successful management and recovery in late-life depression.

Addressing these systemic issues is crucial for improving detection rates and ensuring equitable mental health support for older adults. Collaborative care models, which incorporate mental health specialists into primary care settings, have demonstrated effectiveness in improving outcomes for older adults with depression. Greater awareness among healthcare providers, systematic screening, and improved access

to geriatric mental health services are essential to reducing the substantial burden of late-life depression. Future research should focus on better characterizing its neurobiological mechanisms, refining diagnostic tools, and expanding evidence-based treatment options specifically validated in older populations.

References

1- Abdoli N, Salari N, Darvishi N, et al, (2022). The global prevalence of major depressive disorder (MDD) among the elderly: a systematic review and meta-analysis. Neurosci Biobehav Rev 132:1067-1073.

2- Gencturk S, Unal G, (2024). Rodent tests of depression and anxiety: Construct validity and translational relevance. Cogn Affect Behav Neurosci. 24:191-224.

3- Jia H, Zack MM, Thompson WW, Crosby AE, Gottesman II, (2015). Impact of depression on quality-adjusted life expectancy (QALE) directly as well as indirectly through suicide. Soc Psychiatry Psychiatr Epidemiol.50:939-949.

4- Wei J, Hou R, Zhang X, Xu H, Xie L, Chandrasekar EK, Ying M, Goodman M, (2019). The association of late-life depression with all-cause and cardiovascular mortality among community-dwelling older adults: systematic review and meta-analysis. Br J Psychiatry. 215:449-455.

5- Tannenbaum C, (2015). Inappropriate benzodiazepine use in elderly patients and its reduction. J Psychiatry Neurosci.40: E27-8.

6- Dailly E, Bourin M, (2008). The use of benzodiazepines in the aged patient: clinical and pharmacological considerations. Pak J Pharm Sci. 21:144-150.

7- Lorenzo EC, Kuchel GA, Kuo CL, Moffitt TE, Diniz BS, (2023). Major depression and the biological hallmarks of aging. Ageing Res Rev. 83:101805.

8- Sadek J, Diaz-Piedra B, Saleh L, MacDonald L, (2024). A narrative review: suicide and suicidal behaviour in older adults. Front Psychiatry. 15:1395462.

9- Chattun MR, Amdanee N, Zhang X, Yao Z, (2022). Suicidality in the geriatric population. Asian J Psychiatr.75:103213.

10- Kogan CS, Maj M, Rebello TJ, Keeley JW, Kulygina M, Matsumoto C, Robles R, Huang J, Zhong N, Chakrabarti S, Figueira ML, Stein DJ, Strakowski SM, Garcia-Pacheco JA, Burns S, Montoya M, Andrade L, Ayuso-Mateos JL, Arango I, Balhara YPS, Bryant R, Cournos F, Porto JAD, Meyer TD, Medina-Mora ME, Gureje O, First MB, Gaebel W, Khoury B, Krasnov VN, de Jesus Mari J, Maruta T, Pike KM, Roberts MC, Sharan P, Zhao M, Reed GM, (2021). A global field study of the international classification of diseases (ICD-11) mood disorders clinical descriptions and diagnostic guidelines. J Affect Disord. 295:1138-1150.

11- Devita M, De Salvo R, Ravelli A, De Rui M, Coin A, Sergi G, Mapelli D, (2022).Recognizing Depression in the Elderly: Practical Guidance and Challenges for Clinical Management. Neuropsychiatr Dis Treat. 18:2867-2880.

12- McIntyre RS, Alda M, Baldessarini RJ, Bauer M, Berk M, Correll CU, Fagiolini A, Fountoulakis K, Frye MA, Grunze H, Kessing LV, Miklowitz DJ, Parker G, Post RM, Swann AC, Suppes T, Vieta E, Young A, Maj M, (2022). The clinical characterization of the adult patient with bipolar disorder aimed at personalization of management. World Psychiatry. 21:364-387.

13- Grover S, Sahoo S, Chakrabarti S, Avasthi A, (2019). Anxiety and somatic symptoms among elderly patients with depression. Asian J Psychiatr. 41:66-72.

14- Vercelletto M, Martinez F, Lanier S, Magne C, Jaulin P, Bourin M, (2002).Negative symptoms, depression and Alzheimer's disease. Int J Geriatr Psychiatry. 17(4):383-387.

15- Morin A, Bernard J, Carle G, Ponchel A, Azuar C, Uggocioni G, Mauras T, Bendetowicz D, Camus M, Delcul A, Fossati P, Cohen L, Levy R, (2025). Chronic apathy following a major depressive episode: What is it? Cortex. 188:42-52.

16- Santos M, Kövari E, Hof PR, Gold G, Bouras C, Giannakopoulos P, (2009). The impact of vascular burden on late-life depression. Brain Res Rev.;62:19-32.

17- Dalby RB, Eskildsen SF, Videbech P, Rosenberg R, Østergaard L, (2021). Cerebral hemodynamics and capillary dysfunction in late-onset major depressive disorder. Psychiatry Res Neuroimaging. 317:111383.

18- Abdoli N, Salari N, Darvishi N, et al, (2022). The global prevalence of major depressive disorder (MDD) among the elderly: a systematic review and meta-analysis. Neurosci Biobehav Rev 132:1067-1073.

19- Hu T, Zhao X, Wu M, Li Z, Luo L, Yang C, Yang F. Prevalence of depression in older adults: A systematic review and meta-analysis. Psychiatry Res. 2022 ;311:114511.

20- Koenig HG, Cohen HJ, Blazer DG, Krishnan KR, Sibert TE. Profile of depressive symptoms in younger and older medical inpatients with major depression. J Am Geriatr Soc. 1993;41:1169-1176.

21- Billones RR, Kumar S, Saligan LN, (2020). Disentangling fatigue from anhedonia: a scoping review. Transl Psychiatry.10(1):273.

22- Wang J, Li Y, Yang GY, Jin K, (2024). Age-Related Dysfunction in Balance: A Comprehensive Review of Causes, Consequences, and Interventions. Aging Dis. 16:714-737.

23- Berrios GE, Luque R, 1(995). Cotard's syndrome: analysis of 100 cases. Acta Psychiatr Scand; 91:185-188.

24- Brendel RW, Stern TA, (2005). Psychotic symptoms in the elderly. Prim Care Companion J Clin Psychiatry. 7:238-241.

25- Bastin C, Giacomelli F, Miévis F, Lemaire C, Guillaume B, Salmon E, (2021). Anosognosia in Mild Cognitive Impairment: Lack of Awareness of Memory Difficulties Characterizes Prodromal Alzheimer's Disease. Front Psychiatry. 12:631518.

26- Roberts RE, Shema SJ, Kaplan GA, Strawbridg WJ, (2011).Sleep complaints and depression in an aging cohort: A prospective perspective. Am J Psychiatry.;157(1):81-88.

27- Baeg S, Wang SK, Chee IS, Kim SY, Kim JL, (2000). Anger in elderly patients with depressive disorders. Psychiatry Investig.8:186-193.

28- Sadek J, Diaz-Piedra B, Saleh L, MacDonald L, (2024). A narrative review: suicide and suicidal behaviour in older adults. Front Psychiatry. 15:1395462.

29- Fisher JS, Rezk A, Nwefo E, Masterson J, Ramasamy R. Sexual Health in the Elderly Population. Curr Sex Health Rep. 2020;12:381-388.

30- Allan CE, Valkanova V, Ebmeier KP,(2014). Depression in older people is underdiagnosed. Practitioner.258:19-22.

31- Van Itallie TB, (2005).Subsyndromal depression in the elderly: underdiagnosed and undertreated. Metabolism. ;54(5 Suppl 1):39-44.

32- Fiske A, Wetherell JL, Gatz M, (2009). Depression in older adults. Annu Rev Clin Psychol. 5:363-389.

33- Spandel L, Jośko-Ochojska J, Batko-Szwaczka A, (2016). Polypharmacy as a risk factor for depressive symptoms in geriatric patients: an observational, cross-sectional study. Ars Pharm 57:137-142.

34- Sølvhøj IN, Kusier AO, Pedersen PV, Nielsen MBD, (2021). Somatic health care professionals' stigmatization of patients with mental disorder: a scoping review. BMC Psychiatry. 21(1):443.

35- Dias NS, Barbosa IG, Kuang W, Teixeira AL, (2020). Depressive disorders in the elderly and dementia: An update. Dement Neuropsychol. ;14:1-6.

36- Sinclair LI, Mohr A, Morisaki M, Edmondson M, Chan S, Bone-Connaughton A, Turecki G, Love S, (2023). Is later-life depression a risk factor for Alzheimer's disease or a prodromal symptom: a study using post-mortem human brain tissue? Alzheimers Res Ther.;15(1):153.

37- Jellinger KA, (2025). Comorbid Pathologies and Their Impact on Dementia with Lewy Bodies-Current View. Int J Mol Sci. ;26(16):7674.

38- Bocchetta M, Malpetti M, Todd EG, Rowe JB, Rohrer JD, (2021). Looking beneath the surface: the importance of subcortical structures in frontotemporal dementia. Brain Commun. 3(3):fcab158.

39- Cacciamani F, Houot M, Gagliardi G, Dubois B, Sikkes S, Sánchez-Benavides G, Denicolò E, Molinuevo JL, Vannini P, Epelbaum S, (2021). Awareness of Cognitive Decline in Patients With Alzheimer's Disease: A Systematic Review and Meta-Analysis. Front Aging Neurosci. 13:697234.

40- Tetsuka S, (2021). Depression and Dementia in Older Adults: A Neuropsychological Review. Aging Dis. 12:1920-1934.

41- Aben I, Verhey F, Honig A, Lodder J, Lousberg R, Maes M, (2001).Research into the specificity of depression after stroke: a review on an unresolved issue. Prog Neuropsychopharmacol Biol Psychiatry. 25:671-89.

42- Bourin M, (2018). Post-stroke depression and changes in behavior and personality. Arch Depress Anxiety4: 031-033.

43- Wu S, Zhang Y, Lu Y, Yin Y, Yang C, Tang W, Song T, Tao X, Wang Q. (2025)Vascular depression: A comprehensive exploration of the definition, mechanisms, and clinical challenges. Neurobiol Dis.211:106946.

44- Jellinger KA, (2021).Pathomechanisms of Vascular Depression in Older Adults. Int J Mol Sci.;23(1):308.

45- Doering S, Liljedahl SI, Lindström S, Sinyor M, Hedna K, Bergqvist E, Palmqvist Öberg N, Wiktorsson S, Stefenson A, Hartelius J, Westrin Å, Waern M, (2025). "Younger" and "Older" Old Adults Who Die by Suicide: A Comparison Study and Cluster Analysis. Am J Geriatr Psychiatry;33:1035-1045.

46- Conejero I, Olié E, Courtet P, Calati R, (2018). Suicide in older adults: current perspectives. Clin Interv Aging.;13:691-699.

47- Wisłowska-Stanek A, Kołosowska K, Maciejak P, (2021). Neurobiological Basis of Increased Risk for Suicidal Behaviour. Cells. ;10(10):2519.

48- Chan EC, Conlon K, Gagnon L, (2024). Risk factors and methods in suicides of elderly patients connected to mental health services from 1999-2024. Front Psychiatry.15:1425371.

49- Bourin M. Clinical aspects of depression in the elderly. (2018)Arch Depress Anxiety;4: 026-030.

50- Morgado B, Silva C, Agostinho I, Brás F, Amaro P, Lusquinhos L, Silva MR, Fonseca C, Albacar-Riobóo N, Guedes de Pinho L, (2024).Psychotherapeutic Interventions for Depressive Symptoms in Community-Dwelling Older Adults: A Systematic Review with Meta-Analysis. Healthcare (Basel).12(24):2551

51- Hollon SD, Jarrett RB, Nierenberg AA, Thase ME, Trivedi M, Rush AJ, (2005). Psychotherapy and medication in the treatment of adult and geriatric depression: which monotherapy or combined treatment? J Clin Psychiatry.66:455-468.

52- Bourin M. Prescribed Psychotropic Drugs in the Elderly. In: Gargiulo P.Á., Mesones Arroyo H.L, (2021). (eds) Psychiatry and Neuroscience Update. Springer, Cham. pp 647-660

53- Srifuengfung M, Pennington BRT, Lenze EJ, (2023). Optimizing treatment for older adults with depression. Ther Adv Psychopharmacol.;13:20451253231212327.

54- Mulsant BH, Blumberger DM, Ismail Z, Rabheru K, Rapoport MJ, (2014). A systematic approach to pharmacotherapy for geriatric major depression. Clin Geriatr Med.30(3):517-534.

55- Walaszek A, (2024).Optimizing the Treatment of Late-Life Depression. Am J Psychiatry. 181:7-10.

56- Bourin M, (2003). Use of paroxetine for the treatment of depression and anxiety disorders in the elderly: a review. Hum Psychopharmacol.;18:185-190.

57- Edinoff AN, Akuly HA, Hanna TA, Ochoa CO, Patti SJ, Ghaffar YA, Kaye AD, Viswanath O, Urits I, Boyer AG, Cornett EM, Kaye AM, (2021). Selective Serotonin Reuptake Inhibitors and Adverse Effects: A Narrative Review. Neurol Int.;13:387-401.

58- Elli C, Novella A, Elli C, Pasina L, (2025). Selective Serotonin Reuptake Inhibitors and Risk of Serotonin Syndrome as Consequence of Drug-Drug Interactions: Analysis of the FDA Adverse Event Reporting System. Med Princ Pract. 34:456-463.

59- McCue RE, (1992). Using tricyclic antidepressants in the elderly. Clin Geriatr Med. May; 8:323-334.

60- Kato M, Baba H, Takekita Y, Naito M, Koshikawa Y, Bandou H, Kinoshita T, (2023). Usefulness of mirtazapine and SSRIs in late-life depression: post hoc analysis of the GUNDAM study. Eur J Clin Pharmacol. 79:1515-1524.

61- Howard, W T, Warnock, J K. M.D., Ph.D, (2000). The Efficacy and Toxicity of Bupropion in the Elderly. Jefferson Journal of Psychiatry.;Vol. 15: Iss. 1, Article 8.

62- Spielmans GI, Berman MI, Linardatos E, Rosenlicht NZ, Perry A, Tsai AC. (2016) Adjunctive Atypical Antipsychotic Treatment for Major Depressive Disorder: A Meta-Analysis of Depression, Quality of Life, and Safety Outcomes. Focus (Am Psychiatr Publ).14:244-265.

63- Bobo WV, Shelton RC,(2009). Olanzapine and fluoxetine combination therapy for treatment-resistant depression: review of efficacy, safety, and study design issues. Neuropsychiatr Dis Treat. 5:369-383.

64- Hori H, Kunugi H, (2012). The efficacy of pramipexole, a dopamine receptor agonist, as an adjunctive treatment in treatment-resistant depression: an open-label trial. ScientificWorldJournal. 2012:372474.

65- Mo M, Abzhandadze T, Hoang MT, Sacuiu S, Jurado PG, Pereira JB, Naia L, Kele J, Maioli S, Xu H, Eriksdotter M, Garcia-Ptacek S, (2025). Antidepressant use and cognitive decline in patients with dementia: a national cohort study. BMC Med. 23(1):82.

66- Jeon HJ, Ju PC, Sulaiman AH, Aziz SA, Paik JW, Tan W, Bai D, Li CT, (2022). Long-term Safety and Efficacy of Esketamine Nasal Spray Plus an Oral Antidepressant in Patients with Treatment-resistant Depression- an Asian Sub-group Analysis from the SUSTAIN-2 Study. Clin Psychopharmacol Neurosci. 20:70-86.

67- Parikh C, (2000). Antidepressants in the elderly: challenges for study design and their interpretation. Br J Clin Pharmacol. 49:539-547.

68- Kok RM, Nolen WA, Heeren TJ, (2012). Efficacy of treatment in older depressed patients: a systematic review and meta-analysis of double-blind randomized controlled trials with antidepressants. J Affect Disord. 141:103-115.

69- Steffens DC, (2024).Treatment-Resistant Depression in Older Adults. N Engl J Med. 390:630-639.

70- Arnison T, Eriksson A, Nordenskjöld A, (2025). Electroconvulsive Therapy in the Oldest-Old Patients With Depression: Response and Remission Rates, Prognostic Factors, Adverse Events and Mortality. Am J Geriatr Psychiatry. 33:1065-1076.

71- Knöchel C, Alves G, Friedrichs B, et al, (2015). Treatment-resistant late-life depression: challenges and perspectives. Curr Neuropharmacol 13:577-591.

DOI:10.31579/2578-8868/403