

# Depression in older adults: how do the symptoms differ from adult depression?

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## Abstract

Depression is a common mental illness in older adults and with the projected increase in population of older adults, depression in older adults is likely to result in greater demands on mental and physical healthcare services and also increased healthcare costs. Depression in older adults is under-reported, under-diagnosed and under-treated; it is associated with increased disability, increased mortality and poorer recovery from physical illness. The presentation of depression in older adults is often significantly different from younger adults and presents a diagnostic challenge to clinicians. This article provides an overview of depression in older adults, highlighting the salient features in its presentation and management.

## Introduction

By 2030, depression is projected to be one of the leading causes of disease burden and the major contributor to healthcare costs (1). By the early 2030s, the proportion of older adults aged 65 - 84 is projected to increase by 39% and the proportion of those over the age of 85 years is projected to increase by 106% (2). In this context, depression in older adults is therefore likely to result in a greater demand on healthcare services and increased healthcare costs.

Depression is one of the most common mental illnesses seen in older adults with only dementia being more common. Depression in older adults or 'depression in later life' has been traditionally defined as depression occurring in adults over the age of 65. It is under-reported, under-diagnosed and also under-treated. It is associated with increased disability, increased mortality and poorer recovery from physical illness.

Depression in older adults might be a depressive disorder that appears for the first time in this period or a relapse of a recurrent depressive disorder which started much earlier in life. The term 'late-onset depression' has been used for depression that manifests its first episode in those over 65. Quite a significant proportion of cases of depression in older adults are *de novo* presentations and are associated with vascular risk factors, cognitive deficits and structural changes in the brain with a further postulation that late-onset depression could be a prodrome of dementia (3, 4).

Late-onset depression differs from depression appearing in earlier years in its clinical presentation, aetiology, response to treatment and prognosis (5). The reasons underpinning these differences are not yet clear; they could be the result of the changes seen with ageing, or 'late-onset depression' may represent a different type of affective disorder in older adults.

## How common is depression in older adults?

In England and Wales, the prevalence of depression in older adults was found to be 8.7% in 2007 (6). Luppa et al. established a point prevalence of 7.2% in a meta-analysis (4, 7). The point prevalence was previously reported as having been between 1% and 4% (8, 9).

The prevalence of depression in older adults also varies by the type of residential setting. The highest rates are seen in those who are in long-term institutional care and in hospital inpatients (10% to 50%); in comparison the rates are between 5% and 10% in community-dwelling older adults (10, 11).

Subclinical depression/subthreshold depression is 2 - 3 times more prevalent than clinical depression in older adults (12, 13).

### Which older adults are more likely to develop depression?

As in the case of younger people with depression, the presence of a family history and adverse events in the personal history are linked to an increased risk of developing depression but the genetic links are thought to be less strong in 'late-onset depression'.

Increasing age results in significant physical health changes and psychosocial factors that have the potential to precipitate and maintain the depression. In addition, with increasing age, there are often complex multiple healthcare needs resulting in polypharmacy, and depression is an adverse effect of several medications. Some of these factors have been highlighted below:

#### **Physical**

- Chronic diseases, especially those that cause disability and pain (malignancy, congestive cardiac failure etc.)
- Organic brain disease (cerebrovascular disease, stroke, Parkinson disease, dementia)
- Endocrine diseases (thyroid disease, hypercalcaemia, vitamin B12 deficiency, folic acid deficiency)
- Sensory impairments (hearing and visual impairment)
- Insomnia

#### **Medication**

- Beta blockers (e.g. propranolol)
- Anti-Parkinson drugs (e.g. levodopa, methyl dopa)
- Benzodiazepines
- Hormones (e.g. steroids, levonorgestrel, finasteride)
- Stimulants (e.g. methylphenidate, modafinil)
- Proton pump inhibitors
- Antivirals (alpha-interferon, beta-interferon)
- Others (alcohol, cannabis)

#### **Psychosocial**

- Role transition (lack of purpose, loss of identity, retirement, dependence, being a carer)
- Bereavements (siblings, friends and especially spouse)
- Loss of income and consequent financial difficulties
- Social isolation (living alone, reducing social circles, relocation, institutional care)
- Health-related anxieties

Older adults who develop a first episode of depression in later life (late-onset depression) have been found to have a greater degree of white matter hyperintensities on MRI imaging and these changes are thought to be associated with vascular risk factors such as diabetes mellitus, obesity, hypercholesterolaemia, hypertension, smoking, etc. and are linked to cerebrovascular disease - leading to the use of the term 'vascular depression' (15-17). This is characterised by cognitive impairments and significant difficulties with motivation, apathy and executive function difficulties that are thought to be related to the organic structural changes associated with changes to neuronal circuits particularly of those involving frontal lobes (16).

The incidence of depression is higher in women than in men, in line with what is seen in younger adults, but the male-female difference closes with increasing age (3, 18). Women are more likely to experience

recurrent episodes of depression; they are more likely to seek help and to access healthcare (19, 20).

As already stated, subthreshold depression is more prevalent than clinical depression in older adults. Subthreshold depression is a risk factor for a depressive episode. It is estimated that up to 10% of older adults with subthreshold depressive symptoms develop a clinical depressive disorder per year (13).

Depression has an association with a subsequent diagnosis of dementia and equally people with dementia are at higher risk of developing depression compared to those without (21). It is estimated that late-onset depression may increase the risk of subsequent dementia two-fold (22, 23). Depression can present with a syndrome which closely mimics dementia (pseudo-dementia) and it is estimated that up to 1 - 5% of referrals for cognitive impairment to memory clinics may be accounted for by depressive pseudo-dementia. Similarly about 20 to 30% of people with dementia may also develop depression (24). The incidence is higher with vascular dementia and Parkinson disease dementia. Hypercortisolaemia, hippocampal volume loss, cerebrovascular disease and neuroinflammation have all been proposed to explain the association of depression and dementia but no firm conclusions have been drawn.

Key risk factors for depression in older adults (25):

- older age
- female gender
- single/widow/widower
- chronic medical comorbidity
- psychosocial stressors
- brain white matter changes

### **Do older adults with depression present differently from younger adults?**

The International Classification of Diseases (ICD-10) describes three core symptoms of depression: low mood, anhedonia and reduced energy. Other symptoms include reduced concentration and attention, reduced self-esteem and self-confidence, ideas of guilt and unworthiness, pessimistic views of the future, ideas or acts of self-harm or suicide, disturbed sleep and diminished appetite. For a diagnosis of clinical depression, the symptoms should be present for at least two weeks and should not be attributable to psychoactive substance use or an organic mental disorder. The severity of the depressive episode is classified as mild (2 core symptoms), moderate ( $\geq 2$  core symptoms + 3 to 4 other symptoms) or severe (3 core symptoms + 4 other symptoms). However, depression in older adults presents differently compared to depression in middle age and younger adults (26).

Of the core symptoms, complaints of low mood and reduced energy are less frequent. Often, subjective complaints of low mood are not experienced and older adults instead describe a lack of feeling or emotion (3, 18, 27-29). Similarly complaints of fatigue and tiredness are more common than reduction in energy levels (27, 28).

Older adults with late-onset depression have a higher rate of cardiovascular diseases and white matter abnormalities in the brain. They also have a greater degree of executive dysfunction, suicidal ideation, psychomotor changes and decreased empathy, but lower rates of family history of depression (25). Older adults with depression often present with irritability; agitation is a part of the depressive symptomatology that is not seen as often in younger adults (18). The psychological symptoms of dementia such as impairments in concentration and attention, and reduced motivation, are more common than in younger adults (30).

Depression is often identified by family and carers as a problem with memory and dementia is a significant differential diagnosis. The term 'pseudo-dementia' is used to describe the presence of cognitive deficits in a functional mental illness (31, 32) and 'depressive pseudo-dementia' is a frequent outcome of assessments in memory clinics. It is recognised as a reversible cognitive disorder. Cognitive deficits are frequently seen in depression in older adults (18, 33) and these cognitive deficits are patchy across few domains in comparison to the global impairment seen in a neurodegenerative dementia.

The term 'vascular depression' has been used to describe a depressive syndrome characterised mainly by amotivation and apathy. This is a frequent presentation of clinical depression especially when it is associated with significant cerebrovascular/white matter changes in the brain (34, 35). Other core features of depression in older adults include executive dysfunction ('depression - executive dysfunction syndrome') and psychomotor retardation both of which are related to organic changes especially in the frontal lobe (36, 37).

Due to a combination of cognitive deficits, executive dysfunction, psychomotor retardation, and other factors, depression in older adults is associated with significant functional impairments leading to loss of independence, disability, isolation and withdrawal from normal routines (18, 38, 39). Similar mechanisms are also thought to be responsible for the self-neglect which is another feature of depression in older adults.

Somatisation, hypochondriasis, incontinence, food refusal, weight loss and increase in falls are also associated more with depression in older adults (40, 41). Often these symptoms make it more difficult for the underlying depression to be identified and treated.

Delusions (particularly nihilistic and delusions of poverty) are more common than in younger adults with depression.

### **Why is it difficult to diagnose depression in older adults?**

Depression in older adults is under-reported and under-diagnosed. A variety of factors contribute to this. As highlighted earlier, the presentation of depression in older adults is significantly different and the diagnostic criteria used for depression in the ICD-10 or DSM (Diagnostic and Statistical Manual) do not have the specific criteria for depression in older adults. Symptoms such as somatisation, hypochondriasis, psychomotor retardation, cognitive impairment and anxiety often mask the underlying depression leading to the diagnostic difficulties.

With symptoms not conforming to the core criteria of depression as specified in the ICD-10, the presence of vague symptoms such as fatigue, insomnia, reduced appetite etc. can be easily attributed to physical illness by patients and clinicians (18, 28, 42). They may be easily overlooked (43) or attributed to normal ageing (23).

Older adults are less likely to recognise, report or seek help for depressive symptoms from healthcare professionals (18, 30, 44, 45).

The common differential diagnosis for depression in older adults is dementia and depression often presents as apparent dementia (depressive pseudo-dementia). In depressive pseudo-dementia, the history of mood disturbance usually precedes cognitive symptoms; there is an unwillingness to answer questions rather than a failure of memory as in dementia patients. As already stated, the deficits are often partial rather than the global deficits seen in dementia. A trial of antidepressant therapy may sometimes be appropriate and helpful. Depression in older adults has a higher incidence in those with dementia and can coexist, and in this context make it more difficult to diagnose due to difficulties in communicating these symptoms (28, 46).

### **Key interventions in managing depression in older adults**

Due to the complex comorbidity and overlap of symptoms with physical illness, careful history-taking with information from collateral sources is recommended. Any underlying physical cause should be explored as a first step and baseline investigations should include full blood count, urea and electrolytes, liver function tests, thyroid function tests, vitamin B12 level, folic acid level, fasting glucose and bone profile.

The NICE guidelines CG90 provide a good summary of the interventions that can be offered as a stepped care model and these recommendations are also valid for depression in older adults too (47).

Social interventions to address social isolation such as attendance at a day centre, befriender services, introduction to local community events, and structured exercise programs have all been noted to be helpful especially in mild-to-moderate depression. Correcting sensory impairments and improving mobility and independence using appropriate aids such as hearing aids, spectacles, mobility aids, occupational

therapy input etc. can go a long way in addressing social isolation, as well as improving self-confidence and self-esteem.

Psychological intervention, particularly cognitive behavioural therapy, is equally effective in older and younger adults with depression (48) and should be offered where appropriate. Combined pharmacological therapy and psychological therapy is more effective than psychological therapy on its own for older people with depression (49).

Selective serotonin reuptake inhibitors (SSRIs) are the antidepressants of choice for depression in older adults as they are safer than other antidepressants (50). Of the SSRIs, citalopram, escitalopram and sertraline are preferred choices as most common drug interactions are mediated by cytochrome P450 and these drugs do not inhibit this enzyme system to the same marked degree as some other SSRIs. The risk of adverse effects can be minimised further by starting at a low dose and titrating the dose slowly (following the “start low, go slow” mantra of prescribing in the elderly). The therapeutic effect can be often delayed in older adults compared to younger adults and can take up to 10 - 12 weeks for start of action (51). Hyponatremia is a recognised adverse effect of most antidepressants in older adults, including SSRIs, although SSRIs are generally safer than other antidepressants. Hyponatremia is more common with increasing age, female gender, low body weight, presence of renal failure and with concomitant prescription of diuretics. Older adults are also at risk of increased upper and lower gastrointestinal bleeds. The increased risk, especially with concomitant use of nonsteroidal anti-inflammatory drugs, can be reduced with the prescription of a proton pump inhibitor.

For more resistant depression, combination antidepressants, lithium augmentation, and antipsychotic augmentation are all valid strategies as in younger adults. However, the increased incidence of cerebrovascular incidents and increased mortality with antipsychotic use in dementia patients needs to be considered carefully. Electroconvulsive therapy (ECT) remains an effective option for severe and resistant depression.

Older adults have proportionally higher completed rates of suicide and the risk of suicide increases with resolution of some of the depressive symptoms. Compared to younger adults, a higher proportion of acts deemed as ‘deliberate self-harm’ incidents may actually be failed suicidal attempts. If there is a history of such incidents it is necessary to undertake periodic review of the risks, especially around suicidal ideation, plans and intentions.

The optimum duration of continuing treatment for older adults remains unclear (52) but it can be anywhere between 6 and 36 months (52). NICE recommends at least six months of therapy for an episode of depression and continuation for at least 2 years if there are risks of relapse (47).

### **When should a referral to secondary care be considered?**

The NICE guideline CG90 gives the framework for a stepped care approach to managing depression within the NHS. The following should prompt a clinician to refer to specialist secondary care mental health services with respect to depression in older adults (47):

- inadequate response to initial interventions
- moderate-to-severe depression needing specialist opinion
- severe and complex depression
- risk to life (suicidal ideations/intentions/plans)
- severe self-neglect
- presence of psychotic symptoms
- complex psychosocial symptoms

Risk factors for suicide in older people include the following (1, 53):

- older age
- male sex

- social isolation
- bereavement
- history of previous attempts
- evidence of planning
- chronic painful illness or disability
- drug and alcohol use
- sleep disorders

### What is the prognosis for older adults with depression?

Generally, long-term follow-up studies suggest that older patients who developed depression and recovered in the first few months fall into three groups: 20 – 33% remain completely well for three years, 33 – 40% suffer further depressive disorders with complete remissions and the remaining 33% develop a state of being a chronic invalid punctuated by depressive disorders (54, 55).

Older patients with depression have a higher mortality than matched controls (56, 57). Compared to depression in mid-life, depression in older adults was associated with higher rates of relapse (58), slower rate of recovery (27), and an equal rate of remission (58).

Factors that predict a better prognosis for depression in older adults include: onset before the age of 70; short duration of illness; good previous adjustment; absence of disabling physical illness; and good recovery from previous episodes. The prognosis is not as good for people with a higher severity of depression at baseline, a family history of depression, comorbid anxiety, physical comorbidity, and organic cerebral pathological changes (53, 58-60).

Proportionally, compared to other age groups, more people aged over 65 commit suicide (1) and depression is the leading cause of suicide in older adults (43, 61). Older adults who attempt suicide are more likely to succeed than younger people and even if they survive, the prognosis is worse for older adults (1).

### References

1. Manthorpe J, Iliffe S. Suicide in later life: public health and practitioner perspectives. *International Journal of Geriatric Psychiatry*. 2010 Dec;25(12):1230-8.
2. Demography: future trends [Internet]. The King's Fund. [cited 31 December 2018]. Available from: <http://www.kingsfund.org.uk/time-to-think-differently/trends/demography/ageing-population>
3. Fiske A, Wetherell JL, Gatz M. Depression in older adults. *Annual Review of Clinical Psychology*. 2009 Apr 27;5:363-89.
4. Pocklington C. Depression in older adults. *British Journal of Medical Practitioners*. 2017 Mar;10(1).
5. Rapp MA, Dahlman K, Sano M, Grossman HT, Haroutunian V, Gorman JM. Neuropsychological differences between late-onset and recurrent geriatric major depression. *American Journal of Psychiatry*. 2005 Apr 1;162(4):691-8.
6. McDougall FA, Kvaal K, Matthews FE, Paykel E, Jones PB, Dewey ME, Brayne C. Prevalence of depression in older people in England and Wales: the MRC CFA Study. *Psychological Medicine*. 2007 Dec;37(12):1787-95.
7. Luppá M, Sikorski C, Luck T, Ehreke L, Konnopka A, Wiese B, Weyerer S, König HH, Riedel-Heller SG. Age- and gender-specific prevalence of depression in latest-life: systematic review and meta-analysis. *Journal of Affective Disorders*. 2012 Feb 1;136(3):212-21.
8. Thomas AJ, O'Brien JT. Mood disorders in the elderly. *Psychiatry*. 2009 Feb 1;8(2):56-60.
9. Blazer DG. Depression in late life: review and commentary. *Focus*. 2009 Jan;7(1):118-36.

10. Gellis Z, Kenaley B, McCracken S. Depressive Disorders in Older Adults [Internet]. Chicago: Council on Social Work Education; 2014 [cited 31 December 2018]. Available from: [https://www.cswe.org/getattachment/Centers-Initiatives/Gero-Ed-Center/Initiatives/Past-Programs/MAC-Project/Resource-Reviews/Mental-Health/2014Revision\\_MH\\_Ch3\\_DepressiveDisorders.pdf.aspx](https://www.cswe.org/getattachment/Centers-Initiatives/Gero-Ed-Center/Initiatives/Past-Programs/MAC-Project/Resource-Reviews/Mental-Health/2014Revision_MH_Ch3_DepressiveDisorders.pdf.aspx)
11. Djernes JK. Prevalence and predictors of depression in populations of elderly: a review. *Acta Psychiatrica Scandinavica*. 2006 May;113(5):372-87.
12. Rinaldi P, Mecocci P, Benedetti C, Ercolani S, Bregnocchi M, Menculini G, Catani M, Senin U, Cherubini A. Validation of the five-item geriatric depression scale in elderly subjects in three different settings. *Journal of the American Geriatrics Society*. 2003 May;51(5):694-8.
13. Meeks TW, Vahia IV, Lavretsky H, Kulkarni G, Jeste DV. A tune in "a minor" can "b major": a review of epidemiology, illness course, and public health implications of subthreshold depression in older adults. *Journal of Affective Disorders*. 2011 Mar 1;129(1-3):126-42.
14. Rogers D, Pies R. General medical drugs associated with depression. *Psychiatry (Edgmont)*. 2008 Dec;5(12):28.
15. Sneed JR, Rindskopf D, Steffens DC, Krishnan KR, Roose SP. The vascular depression subtype: evidence of internal validity. *Biological Psychiatry*. 2008 Sep 15;64(6):491-7.
16. Sneed JR, Culang-Reinlieb ME, Brickman AM, Gunning-Dixon FM, Johnert L, Garcon E, Roose SP. MRI signal hyperintensities and failure to remit following antidepressant treatment. *Journal of Affective Disorders*. 2011 Dec 1;135(1-3):315-20.
17. Baldwin RC. Poor prognosis of depression in elderly people: causes and actions. *Annals of Medicine*. 2000 Jan 1;32(4):252-6.
18. Evans M, Mottram P. Diagnosis of depression in elderly patients. *Advances in Psychiatric Treatment*. 2000 Jan;6(1):49-56.
19. Mackenzie CS, Gekoski WL, Knox VJ. Age, gender, and the underutilization of mental health services: the influence of help-seeking attitudes. *Aging and Mental Health*. 2006 Nov 1;10(6):574-82.
20. Oliver MI, Pearson N, Coe N, Gunnell D. Help-seeking behaviour in men and women with common mental health problems: cross-sectional study. *The British Journal of Psychiatry*. 2005 Apr;186(4):297-301.
21. Conradsson M, Rosendahl E, Littbrand H, Gustafson Y, Olofsson B, Lövhelm H. Usefulness of the Geriatric Depression Scale 15-item version among very old people with and without cognitive impairment. *Aging & Mental Health*. 2013 Jul 1;17(5):638-45.
22. Ownby RL, Crocco E, Acevedo A, John V, Loewenstein D. Depression and risk for Alzheimer disease: systematic review, meta-analysis, and meta-regression analysis. *Archives of General Psychiatry*. 2006 May 1;63(5):530-8.
23. Jorm AF. History of depression as a risk factor for dementia: an updated review. *Australian & New Zealand Journal of Psychiatry*. 2001 Dec;35(6):776-81.
24. Tsuno N, Homma A. What is the association between depression and Alzheimer's disease? *Expert Review of Neurotherapeutics*. 2009 Nov 1;9(11):1667-76.
25. Sözeri-Varma G. Depression in the elderly: clinical features and risk factors. *Aging and Disease*. 2012 Dec;3(6):465.
26. Rapp MA, Dahlman K, Sano M, Grossman HT, Haroutunian V, Gorman JM. Neuropsychological differences between late-onset and recurrent geriatric major depression. *American Journal of Psychiatry*. 2005 Apr 1;162(4):691-8.
27. Arean PA, Ayalon L. Assessment and treatment of depressed older adults in primary care. *Clinical Psychology: Science and Practice*. 2005 Sep;12(3):321-35.
28. Alexopoulos GS. Depression in the elderly. *The Lancet*. 2005 Jun 4;365(9475):1961-70.

29. Evans M. Detection and management of depression in the elderly physically ill patient. *Human Psychopharmacology: Clinical and Experimental*. 1995 Nov;10(S4):S235-41.
30. Mitchell AJ, Rao S, Vaze A. Do primary care physicians have particular difficulty identifying late-life depression? A meta-analysis stratified by age. *Psychotherapy and Psychosomatics*. 2010;79(5):285-94.
31. Kang H, Zhao F, You L, Giorgetta C. Pseudo-dementia: a neuropsychological review. *Annals of Indian Academy of Neurology*. 2014 Apr;17(2):147.
32. Fischer P. The spectrum of depressive pseudo-dementia. In: *New Trends in the Diagnosis and Therapy of Non-Alzheimer's Dementia 1996* (pp. 193-203). Springer, Vienna.
33. Butters MA, Bhalla RK, Mulsant BH, Mazumdar S, Houck PR, Begley AE, Dew MA, Pollock BG, Nebes RD, Becker JT, Reynolds III CF. Executive functioning, illness course, and relapse/recurrence in continuation and maintenance treatment of late-life depression: is there a relationship?. *The American Journal of Geriatric Psychiatry*. 2004 Jul 1;12(4):387-94.
34. Alexopoulos GS, Bruce ML, Silbersweig D, Kalayam B, Stern E. Vascular depression: a new view of late-onset depression. *Dialogues in Clinical Neuroscience*. 1999 Sep;1(2):68.
35. Taylor WD, Aizenstein HJ, Alexopoulos GS. The vascular depression hypothesis: mechanisms linking vascular disease with depression. *Molecular Psychiatry*. 2013 Sep;18(9):963.
36. Lockwood KA, Alexopoulos GS, Kakuma T, Van Gorp WG. Subtypes of cognitive impairment in depressed older adults. *The American Journal of Geriatric Psychiatry*. 2000 Jun 1;8(3):201-8.
37. Bennabi D, Vandel P, Papaxanthis C, Pozzo T, Haffen E. Psychomotor retardation in depression: a systematic review of diagnostic, pathophysiologic, and therapeutic implications. *BioMed Research International*. 2013.
38. Butters MA, Whyte EM, Nebes RD, Begley AE, Dew MA, Mulsant BH, Zmuda MD, Bhalla R, Meltzer CC, Pollock BG, Reynolds CF. The nature and determinants of neuropsychological functioning in late-life depression. *Archives of General Psychiatry*. 2004 Jun 1;61(6):587-95.
39. Polenick CA, Flora SR. Behavioral activation for depression in older adults: Theoretical and practical considerations. *The Behavior Analyst*. 2013 Apr 1;36(1):35-55.
40. Shahpesandy H. Different manifestation of depressive disorder in the elderly. *Neuroendocrinology Letters*. 2005 Dec 1;26(6):691-5.
41. El-Gabalawy R, Mackenzie CS, Thibodeau MA, Asmundson GJ, Sareen J. Health anxiety disorders in older adults: conceptualizing complex conditions in late life. *Clinical Psychology Review*. 2013 Dec 1;33(8):1096-105.
42. Friedman B, Conwell Y, Delavan RR, Wamsley BR, Eggert GM. Depression and suicidal behaviors in Medicare primary care patients under age 65. *Journal of General Internal Medicine*. 2005 May 1;20(5):397-403.
43. Birrer RB, Vemuri SP. Depression in Later Life: A Diagnostic and Therapeutic Challenge. *American Family Physician*. 2004 May 15;69(10).
44. Crabb R, Hunsley J. Utilization of mental health care services among older adults with depression. *Journal of Clinical Psychology*. 2006 Mar;62(3):299-312.
45. Speer DC, Schneider MG. Mental health needs of older adults and primary care: Opportunity for interdisciplinary geriatric team practice. *Clinical Psychology: Science and Practice*. 2003 Mar;10(1):85-101.
46. Alexopoulos GS, Kiess DN, Heo M, Murphy CF, Shanmugham B, Gunning-Dixon F. Executive dysfunction and the course of geriatric depression. *Biological Psychiatry*. 2005 Aug 1;58(3):204-10.
47. Depression in adults: recognition and management: Clinical Guideline CG90 [Internet]. Nice.org.uk. 2018 [cited 31 December 2018]. Available from: <https://www.nice.org.uk/guidance/cg90>
48. Cuijpers P, van Straten A, Smit F, Andersson G. Is psychotherapy for depression equally effective in younger and older adults? A meta-regression analysis. *International Psychogeriatrics*. 2009 Feb;21(1):16-24.

49. Cuijpers P, van Straten A, Warmerdam L, Andersson G. Psychotherapy versus the combination of psychotherapy and pharmacotherapy in the treatment of depression: a meta-analysis. *Depression and Anxiety*. 2009 Mar;26(3):279-88.
50. Mottram PG, Wilson K, Strobl JJ. Antidepressants for depressed elderly. *Cochrane Database of Systematic Reviews*. 2006(1).
51. Nelson JC, Delucchi K, Schneider LS. Efficacy of second generation antidepressants in late-life depression: a meta-analysis of the evidence. *The American Journal of Geriatric Psychiatry*. 2008 Jul 1;16(7):558-67.
52. Kok RM, Heeren TJ, Nolen WA. Continuing treatment of depression in the elderly: a systematic review and meta-analysis of double-blinded randomized controlled trials with antidepressants. *The American Journal of Geriatric Psychiatry*. 2011 Mar 1;19(3):249-55.
53. Rodda J, Walker Z, Carter J. Depression in older adults. *BMJ*. 2011 Sep 28;343:d5219.
54. Baldwin RC, Jolley DJ. The prognosis of depression in old age. *The British Journal of Psychiatry*. 1986 Nov;149(5):574-83.
55. Post F. The management and nature of depressive illnesses in late life: a follow-through study. *The British Journal of Psychiatry*. 1972 Oct;121(563):393-404.
56. Murphy E. The prognosis of depression in old age. *The British Journal of Psychiatry*. 1983 Feb;142(2):111-9.
57. Vilalta-Franch J, Planas-Pujol X, López-Pousa S, Llinàs-Reglà J, Merino-Aguado J, Garre-Olmo J. Depression subtypes and 5-years risk of mortality in aged 70 years: a population-based cohort study. *International Journal of Geriatric Psychiatry*. 2012 Jan;27(1):67-75.
58. Mitchell AJ, Subramaniam H. Prognosis of depression in old age compared to middle age: a systematic review of comparative studies. *American Journal of Psychiatry*. 2005 Sep 1;162(9):1588-601.
59. Licht-Strunk E, Van Marwijk HW, Hoekstra TB, Twisk JW, De Haan M, Beekman AT. Outcome of depression in later life in primary care: longitudinal cohort study with three years' follow-up. *BMJ*. 2009 Feb 2;338:a3079.
60. Azar AR, Chopra MP, Cho LY, Coakley E, Rudolph JL. Remission in major depression: results from a geriatric primary care population. *International Journal of Geriatric Psychiatry*. 2011 Jan;26(1):48-55.
61. Sawyer P, Williams BR. Counseling Older Adults at Risk of Suicide: Recognizing Barriers, Reviewing Strategies, and Exploring Opportunities for Intervention. *Alabama Counseling Association Journal*. 2012;38(2):80-103.