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DEPRESSION IN THE ELDERLY

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Resumo

O objetivo deste artigo de revisão é resumir a literatura disponível acerca do tópico “A depressão e o idoso” no que diz respeito a epidemiologia, fatores protetores e de risco, diagnóstico, tratamento e prevenção. Como tal, foi feita uma pesquisa através do PubMed considerando artigos publicados há menos de 20 anos, utilizando como palavras-chave *depressão, idoso, idade avançada, epidemiologia, prevenção, fatores de risco e tratamento*, e de seguida selecionando apenas os artigos considerados relevantes. A depressão afeta 350 milhões de pessoas e é a principal causa mundial de invalidez. Uma vez que a população mundial envelhecida se encontra a aumentar rapidamente, é essencial um melhor entendimento da depressão no idoso. A depressão não é uma consequência natural do processo de envelhecimento e manifesta-se de forma diferente no idoso, através de alterações cognitivas, somatização, alterações corporais e uma menor probabilidade de insurgência de sintomas afetivos. O suicídio é uma possível consequência desta doença e é mais prevalente na população envelhecida do que nas populações mais jovens. Os fatores de risco vasculares constituem uma peça importante no desenvolvimento da depressão no idoso e como tal o seu conhecimento deve ser aprofundado bem como o de outras vulnerabilidades biológicas relacionadas com a idade. Os cuidados primários de saúde são essenciais na prevenção pelo que os médicos de família devem ser educados no sentido de detetar indivíduos em risco de desenvolver a patologia. O tratamento é tão eficaz nesta idade como na população mais jovem e existem várias opções disponíveis, desde fármacos a psicoterapia e, em casos particulares, terapia electroconvulsiva. Embora a literatura neste tópico esteja a aumentar, é ainda reduzida especialmente considerando a existente acerca de outras doenças psiquiátricas menos prevalentes nesta idade, como a demência.

Palavras-chave: depressão, idoso, idade avançada, epidemiologia, prevenção, fatores de risco e tratamento

Abstract

The aim of this review was to assess the available literature on the topic of elderly depression in terms of epidemiology, risk and protective factors, diagnosis, treatment and prevention. With that purpose a research was made via PubMed, with a timeline of the last 20 years, using the keywords *depression, elderly, old, late-life, aging, epidemiology, prevention, risk factors* and *treatment*, subsequently selecting the articles found to be relevant. Depression affects 350 million people and is the main cause of disability worldwide. As the world population is ageing at a rapid rate, better understanding depression in old age is key. Depression is not a normal part of the ageing process and can manifest itself differently in old age, with cognitive alterations, somatic symptom, peripheral body changes and less likelihood to present affective symptoms. A serious possible outcome of depression is suicide, that is more prevalent in older populations than any other age group. Vascular risk factors play an important role in the development of depressive disorders in this age and should be further studied, as well as other age-associated biological vulnerabilities. Primary care services play an important role in prevention and efforts should be made to better educate general practitioners into detecting at risk individuals. There are various treatment options available, from drug treatments to psychotherapy and, when needed, electroconvulsive therapy. Treatment was proven to be as effective in this age group as in younger populations. Although literature on this topic is growing it is still considerably low when comparing to other less prevalent psychiatric diseases in old age, such as dementia.

Keywords: depression, elderly, old, late-life, aging, epidemiology, prevention, risk factors, treatment

I - Introduction

Depression is a disorder that has a major health impact at a global scale. According to the World Health Organization, it is estimated to affect 350 million people, being the leading cause of disability worldwide. Taking in consideration the projections made by the same organization, which state that the number of persons aged 65 years or older is expected to rise from an estimated 524 million in 2010 to about 1.5 billion in 2050, the importance of better understanding and managing late life depression becomes evident.

Major depression affects 1% to 3% of the general elderly population, with clinical depressive symptoms being also observed in 8% to 16% of said population [1]. Portugal, with more than 1,5 million people over the age of 65, has 100 thousand cases of depression, many of which are frequently misdiagnosed [2]. This may partly be because the presentation of this disorder in older people is variable, especially in the early stages. Other unrelated clinical symptoms, polypharmacy and the co-existence of multiple diseases can mask the depressive syndrome and cause medical professionals to underestimate it [3].

Although the literature on this subject is increasing, it is still substantially low when compared to other mental health problems in the elderly, such as dementia. Considering that depression is the most common mental illness in this age [4], that it significantly impairs the quality of life and that it represents a strong predictor of suicide (which is higher in older people than in any other age group) [5], the need to do further research on this subject is crucial. Simply put, elderly depression is a major public health issue that can have consequences not only on a social scale but also when considered through an economical and administrative perspective, taking into account that it leads to an increased frequency of emergency rooms and doctors offices [6].

The aim of this article is therefore to review the existing literature about depression among older people, focusing especially on risk factors, diagnosis, treatment and prevention strategies.

II – Materials and methods

The research for this review was made via PubMed, with a timeline of the last 20 years, using the keywords *depression, elderly, old, late-life, aging, epidemiology, prevention, risk factors* and *treatment*. The articles selected were the ones found to be relevant to the review and the more recent literature was given priority. Articles who were specific to elderly depression in the context of a comorbid disease, such as dementia, were excluded as were those who focused on a very specific topic of elderly depression, using small samples. All articles selected were subjected to a careful reading and examination, contributing to the elaboration of this review.

III - Risk Factors

There is a considerable number of risk factors for elderly depression that, for organizational purposes, can be divided in social, psychological and biological (Table 1), keeping in mind that all three areas are interconnected, that each individual will respond differently to these factors and that they may also be counterbalanced by protective factors. In other words, the presence of a number of risk factors does not signify by itself the development of a depressive syndrome.

Table 1 – Classification of risk factors for elderly depression

Biological Risk Factors	Psychological Risk Factors	Social Risk Factors
<ul style="list-style-type: none"> • Gender • Age • Cognitive impairment and dementia • Vascular disorders • Endocrinal disorders • Genetic factors • Substance use • Other comorbidities 	<ul style="list-style-type: none"> • Personality traits • Cognitive distortions • Personality disorders • Coping mechanisms 	<ul style="list-style-type: none"> • Stressful life events • Socio-economic status • Social support

1. Gender and Age

According to Weyerer et al, women are considerably more affected by depression than man [OR(Univariate Odd Ratio)=1.7, 95% CI(Confidence Interval) 1.27–2.18] [7] although some studies were unable to demonstrate this difference [8]. In terms of age as a risk factor, Weyerer et all [7] documented that subjects 85 years of age and older (OR=1.7, 95% CI 1.16–2.42) were 70% times more at risk of depression when compared to the 75–79 years age group. Still, several studies [9,10] demonstrate that major depression is more frequent among younger adults making age somewhat of a protective factor that could be partially explained by the wisdom acquired during time.

2. Cognitive impairment and dementia

Elderly depression and dementia are often interconnected, with depressive syndromes being frequently present in individuals with this condition. In fact, major depression was found to have a prevalence of 17% in patients with Alzheimer's disease [11] while another study suggests that family history of dementia may be a predictor of depression in first-degree relatives [8].

3. Vascular Risk Factors

Vascular risk factors can have a major impact in the development of major depression among the elder. The prevalence of depressive symptoms is 27% among community-living stroke survivors [12] and hypertension, coronary disease and diabetes have also been identified as possible risk factors for the development of major depression [13]. In fact, researchers proposed a new hypothesis for the origin of late onset depression in a significant sub-population of elderly patients, called vascular depression, supported by imaging studies of white-matter hyperintensities, which are bright regions seen in the brain parenchyma on T2-weighted magnetic resonance imaging (MRI) scans. According to M. Culang-reinlieb et al, this theory is based on the fact that elderly patients with depression had higher rates and greater severity of hyperintensities on T2-weighted brain MRI when compared with patients with early-onset depression. It was also found that patients with late onset depression and MRI hyperintensities had greater neuropsychological impairment when compared with younger patients suffering from depression and that the greater severity of MRI hyperintensities was associated with poorer treatment response [14]. It seems that these hyperintensities represent lesion to the white-matter tracks possibly contributing to the disruption of neural circuits associated with depression. The vascular depression theory is a theme of increasing interest in the scientific community and it will be further discussed on the diagnose section of this review.

4. Endocrinal risk factors

Corticotropin-releasing factor (CRF) is a peptide hormone and neurotransmitter that mediates sleep and appetite disturbances, reduced libido and psychomotor changes and its hypersecretion is thought to be associated with depression. In the normal aging process its levels decrease while the response of dehydroepiandrosterone sulfate (DHEA-S) to CRF increases. According to Yaffe et al, low levels of DHEA-S are linked to higher rates of depression and depressive symptoms in community-dwelling older women [15].

Testosterone may also play a role in the development of depression in the elderly, being that the total serum of this hormone declines with aging and that its levels were found to be lower in elderly men with dysthymic disorder than in men without depressive symptoms [16]

Additionally, when discussing this particular subtype of risk factor, anatomical changes that cause endocrinal dysfunction must also be addressed. Hippocampus atrophy has been associated with the development of depression and a decreased volume of this structure was documented after a first episode of major depression even in patients under antidepressant treatment [17]. Stress and chronic medical illness, both common among the oldest, can cause hypercortisolaemia leading to loss of pre-existing hippocampal neurons. Since the hippocampus is particularly vulnerable to the aging process it is fitting to consider its dysfunction as an important risk factor for elderly depression. It must be kept in mind, however, that this process is not one sided but instead part of a complex vicious cycle, being that depressive symptoms can lead to increased cortisol secretion which inhibits neurogenesis leading to hippocampal volume loss [10]. Furthermore, the hippocampal region is also vulnerable to ischemia, one of the risk factors discussed earlier, proving once more that the development of depression cannot be reduced to one single factor but to an intricate group of interactive variants.

5. Heredity

Studies have shown that hereditary factors may also play a role in late-life depression. One study reports that in community-residing elderly twins, heredity accounted for 18% of the variation in depressive symptoms [18]. At the same time, when compared to patients with early-onset depression, older patients are less likely to have a relative with this disease [19]. While there has not been a genetic marker for elderly depression identified as of yet, it seems that genetic predisposition to late-life major depression is mediated by vascular lesions. Patients with late-onset major depression were found to exhibit a higher frequency of C677T mutation of the methylene tetrahydrofolate reductase enzyme (MTHFR) when compared to controls [20]. Variations in this gene can lead to cerebrovascular lesions, explaining its possible association with vascular depression.

6. Comorbidities

The presence of medical comorbidities such as coronary disease, hip fracture, kidney disease, diabetes, arthritis, ulcers, bowel and urinary incontinence are important risk factors for depression in elderly patients [10] and may even be considered one of the main causes of this disease in this subgroup, especially when taking into account the high frequency of multiple diseases in the elderly. Chronic somatic diseases are also associated with a higher number of cases where the depressive symptoms persist at follow-up [21]. The existence of physical pain also plays an important role, with depressive symptom scorings being higher in patients with pain than in patients without it and the functional impairment that results from chronic diseases, limited daily activities are also associated with the development of depressive symptoms [22].

When discussing psychiatric comorbidities in particular it is known that risk of late life depression is higher when a personal and family history of psychiatric disorders is present while the chance of recurrence also increases [8]. Despite this fact, when compared to

younger patients, the comorbidity of depression with other psychiatric diseases, with the exception of dementia, is less frequent in the elderly.

Anxiety symptoms were not only associated with depression but it was also reported that when this two condition co-exist, the severity of its symptoms is significantly higher [23]. Alcohol use disturbances were also associated with depression [8].

7. Substance use

Depression can be caused by the use of certain medications such as progesterone, oestrogens, steroids, benzodiazepines, anti-parkinsonian drugs, methyldopa, β blockers, non-selective β blockers, gastrointestinal/metabolic medication (such as cimetidine), clonidine, hydralazine, tamoxifen, vinblastine, vincristine, and dextropropoxyphene [24, 25]. Taking into account that the use of medication tends to be higher as patients grow older, this risk factor becomes especially important in the elderly and should always be considered, especially if the depressive symptoms started after the introduction of one of the drugs listed earlier in the paragraph.

8. Psychological factors

Personality traits are an important part of the pathological process that leads to depression. The concept of neuroticism, which is a personality trait characterized by moderately stable tendencies to respond in a negative manner to threat, loss or frustration, has long been associated with depression, both in younger and older patients. It seems that in older adults the relation between neuroticism and depression has an hereditary component in the form of a shared genetic vulnerability [26]. According to one study, elderly patients who suffer from a personality disorder were four times more likely to have persistent and recurrent depressive symptoms [27]. Maladaptative coping mechanisms, such as avoidance coping and ruminative coping style, seem to be related with depression. Avoidance coping, that like the name suggests is characterized by an the attempt to avoid dealing with a stressor, has also been

associated with anxiety by many studies made on the subject and is now being studied in the context of major depression. One study found that among older adults, the effect of poor health on depression was stronger among those with higher scores on a measure of experiential avoidance, suggesting that this coping mechanism worsens the symptoms and effects of the disease. The ruminative coping style is characterized by repeatedly thinking about a stressor in a passive manner, focusing on its causes and consequences instead of its possible solutions and is also associated with late-life depression as well as depression among younger patients [28]. At last, when discussing psychological risk factors for depression in older adults, cognitive distortions can also be addressed. Djernes et al, explains that cognitive distortions may relate to depression in that depressed patients can overreact or misinterpret life events and exaggerate their possible adverse outcome. In fact, older patients with major depression reported more recent life events as having a negative impact, especially when it came to interpersonal conflict, in a greater manner than healthy controls [8].

9. Social risk factors

There has been suggested a number of different social risk factors that may apply to younger patients as well as older patients but its impact can still vary according to the age of the subject. Generally speaking, it seems that social risk factors have a higher impact when it comes to early onset depression with the exception of the very old, a subgroup that usually has very few resources and is frequently exposed to great stressors. In spite of this fact, social factors can still play an important role when it comes to late life depression if we consider, for example, that stressful life events like the dead of a loved one, a physical illness or a disability tend to grow both in number and in severity across the lifespan. Therefore, it seems appropriate in the context of this review to discuss the most relevant social risk factors.

9.1 - Stressful life events

Stressful life events have long been associated with the development of major depression and are an important subject of study in psychiatry. However, the nature of this relationship is still unclear, whether it acts as a precipitator or whether it plays the role of a predisposing factor.

This association is valid throughout the lifespan (and therefore valid in the context of elderly depression) and seems to apply not only to severe life events, such as bereavement and life-threatening illness of self or others, as well as to social difficulties like housing, marital and family relationships [29].

Among the elder the main stressors seem to be bereavement, interpersonal conflict, living-situation changes and a recent disability or illness whether it is experienced by the subject himself or by someone of his relations. Remarkably, retirement does not appear to be related with late-life depression, even though men who retire early may be an exception [30]. The number of these stressful life events influences the risk of depression but when comparing to younger adults, it seems that the elderly are less susceptible due to the fact that most stressful events that can lead to depression in older adults are somewhat predictable and therefore considered beforehand. For example, the passing of a spouse, although it causes a major negative impact in all ages is usually unexpected early in life and therefore puts younger patients at a higher risk for depression than older ones. It is also true that a significant number of life events that cause negative impact occurs before late-life, such as divorce or unemployment [10].

Discussing the specific stressful life event that is bereavement it is important first of all to stress that grief is a normal response to loss and not a pathologic process. The usual duration of grief varies depending on the circumstances of the loss, the type of relationship had with the deceased person, the cultural context, among other factors. Still, studies show that the average duration of this process lasts about six months, period in which grief, if not resolved,

becomes better integrated in way in which it does not significantly affect normal daily activities. With that being said, the concept of complicated grief has been suggested and is explained as an aberrant response that occurs in a minority of people following the loss of a loved one and is thought to affect about 10% of bereaved people overall [31]. The most recent revision of the Diagnostic Statistical Manual of Mental Disorders (DSM-V) eliminated the bereavement exclusion (present in the previous edition) from the criteria for major depressive disorder, highlighting the fact that although grief is most of the times normal, major depression should not be excluded solely based on the fact that a loss occurred. Therefore, the importance of bereavement as a risk factor for depression can now be considered more relevant. Bereavement triples the risk of depression, having the largest effect size of any risk factors examined in a study of depressive symptoms and disorders conducted among adults aged 50 years or older with men having higher rates of depression both in number and duration after the death of a spouse [28].

Being a caregiver is also thought to increase risk of depression in older adults, as it was implied earlier, although this is not consensual information. One study found that the prevalence of depressive symptoms in caregivers of people with dementia is about 43–47% [32]. Another study suggests that this risk is higher when it comes to those caring for a person with dementia as opposed to caregivers of a patient with a physical disability, while the severity of behavior problems and distress in the individuals being cared for was also found to predict depression in the caregiver [33].

9.2 - Social-economic status

Socio-economic disadvantage has an important role as a risk factor and was associated with prevalence and persistence of depressive symptoms over 2–4 years in study with adults with aged 50 years or older that met criteria for major depression [21]. In fact, a negative change in the financial status is one of the most frequent stressful life events among older adults [34].

This financial risk factor may be partly explained by some of the consequences of having a poor income such as poor nutrition, decreased opportunities for recreational activities and exposure to unsafe and unstable environments. At the same time, still in the topic of social-economic disadvantages, low educational level was also associated with depressive disorders [35].

9.3 - Social support

Positive and stable social support networks are of the highest importance in an individual's life and are considered one of the determinants of health by the World Health Organization. That being said, disturbances in social support networks can be considered an important risk factor for late life depression whether it is by lack or excess of social support or by a faulty perception of that support.

In terms of marital status, married men seem to be more prone to depressive symptoms than women, specially those with emotionally dependent wives, while being unmarried, separated or divorced were found to be risk factors for depression in both genders. Other social support disturbances such as social isolation and loss of close social contacts are also associated with depression among older individuals (including those older than 75). The perception of the provided social support is also important. A lack of satisfaction with social support was found to be a risk factor for depressive disorders as well as subjective need for care and social support deficits [8].

Social support networks can also work as a possible mediator between other risk factors and the development of depressive symptoms. In fact, perceived social support was found to play a role in the relationship between disability and depressive symptoms over time [10].

Although the general population may think otherwise, older adults were found to perceive their social support networks as stable and adequate, with sufficient contact with close personal relations, as opposed to younger individuals, who tend to feel more lonely even

though they usually have a larger social network. It seems that the quality of these social relations plays a more important role in the development of depression than the quantity of it [28]. Finally, it should also be kept in mind that this risk factor gains an added importance when there is a sudden loss or change in one of the relations of one's social network (or, in other words, when there is a stressful life event).

9.4 - Other social risk factors

According to Djernes et al., depression is associated with low indexes of quality of life and poor life satisfaction and a negative self-perception overall and a pessimistic perception of one's health is also associated with depressive disorder. Other two risk factors for late life depression referred by the same author are lack of social activities and living alone, with individuals who do not have any other members in their household being more likely to develop depressive symptoms [8].

IV - Protective factors

As mentioned earlier, the presence of one or more of the listed risk factors doesn't necessarily predict depression as an outcome. Taking into account the number of risk factors that an elder adult can have as a consequence of a deteriorating health (as a result of the insurgence of new disabilities and disorders, which happens frequently in this age group), changes in the immune and neurological systems and the narrowing of social networks, to name a few examples, the fact that there are not more cases of late-life depression, with most older adults never having experienced it, becomes even more intriguing. One of the possible explanations for this fact lies on the possible presence of protective factors that may diminish the negative impact of the risk factors.

Considering this, there are protective factors that seem to apply specifically to older individuals. First of all, it appears that the elder have a different approach when it comes to

experience events than younger adults, dealing with them in a more positive manner, deemphasizing negative experience.

According to Carstensen et al, who proposed the socio-emotional selectivity theory, social motives are either related to knowledge acquisition or to the regulation of emotion. Perception of time is key in the process of selecting and pursuing social goals. Older adults tend to perceive time as limited and therefore prioritize emotional goals [36]. Selecting this positive experiences while avoiding social goals that can possible destabilize their emotional well being may work as a protective factor for the onset of depression among older adults.

Another potential protective factor, as it can be read on the topic of “social risk factors” discussed above, is a well-established and stable social support network, or one that is perceived as such. Religion may also play a protective role against depression in the elderly (who are usually more involved in this practice than younger adults), although there is not, as of yet, a clear explanation for this phenomenon [28]. Physical exercise also appears to have a benefic effect in the prevention of elderly depression [37]. There are also other possible protective factors against depression being currently studied, particularly ones that may diminish the effects of biological vulnerabilities, as is the case of hormone replacement therapy.

V - Classification and diagnosis

1. Classification

In order to correctly identify a depressive disorder it is essential to know the diagnostic criteria. As such, it is presented bellow a list of the different depressive disorders that can be found in the elderly.

1.1 - Major Depressive Disorder

According to the DSM-V, in order to diagnose Major Depression, five (or more) of the following symptoms must have been present during the same 2-week period and represent a change from previous functioning:

- 1) Depressed mood most of the day, nearly every day, as indicated by either subjective report or observation made by others; Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation);
- 2) Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day;
- 3) Insomnia or hypersomnia nearly every day;
- 4) Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down);
- 5) Fatigue or loss of energy nearly every day;
- 6) Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick);
- 7) Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others);
- 8) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

At least one of the symptoms is either depressed mood or loss of interest or pleasure.

The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning and the episode is not attributable to the physiological effects of a substance or to another medical condition.

1.2 - Persistent Depressive Disorder (Dysthymia)

The DSM-V presents the following criteria for the diagnosis of dysthymia:

Depressed mood for most of the day, for more days than not, as indicated by either subjective account or observation by others, for at least 2 years. Presence, while depressed, of two (or more) of the following:

1. Poor appetite or overeating.
2. Insomnia or hypersomnia.
3. Low energy or fatigue.
4. Low self-esteem.
5. Poor concentration or difficulty making decisions.
6. Feelings of hopelessness.

During the 2-year period of the disturbance, the individual has never been without the symptoms for more than 2 months at a time and the symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

1.3 - Psychotic Depression

Psychotic depression, that if using the terminology of the DSM-V is a subtype of major depression (Major depression with psychotic features), is one of the most serious types of depressive disorders and elderly patients are specially at risk for the development of this disorder with a reported range of psychoses from 16% to 23% in this population [37] which is why this depressive disorder is highlighted in this section. In short, patients with psychotic depression are those who suffer from major depression while presenting delusions or hallucinations. The themes of these depressive delusions are usually guilt, hypochondriasis, nihilism, persecution, and sometimes jealousy [24].

1.4 - Vascular Depression

As discussed above, in the risk factors' section, vascular depression is a relatively recent concept that was proposed as a possible subtype of depression and is specially relevant in the elderly population. This hypothesis states that cerebrovascular disease might predispose, precipitate or even perpetuate some late-life depressive syndromes and is based on the fact that the rate of depression in patients with hypertension, diabetes and coronary disease is fairly high, as is also the case with patients who have had a stroke. Furthermore, the frequent occurrence of silent stroke and white matter hyperintensities in late-onset depression and the fact that family history of mood disorders in depression that is set in the context of a silent stroke is not frequent, are also one of the bases of the concept of vascular depression [13].

Alexopoulos et al., studied the differences of clinical presentation between elderly patients with clinically defined vascular depression and elderly depressed patients without the risk factors that define this subtype of depressive disorder. This studied concluded that elderly depression in the context of vascular risk factors, often has a clinical presentation that includes cognitive dysfunction, disability, retardation, lack of insight and limited depressive ideation. The knowledge of the specific symptoms that can be present in patients with vascular depression can be crucial in terms of prognosis and management of the disease.

2. Diagnosis

Diagnosing depressive disorders in older populations can be difficult due to a number of reasons. First of all, there are some signs and symptoms of depression that although not part of the diagnostic criteria, are of particular interest in this population, such as cognitive impairment and peripheral body changes, including hypercortisolaemia, increased abdominal fat, decreased bone density and weight loss (with depression being the main cause of this last sign in the elderly). Also, older patients suffering from major depression who do not have

dementia frequently have problems of concentration, speed of mental processing and executive function [24]. Second, it is also important to consider social aspects when diagnosing depression in the elderly. Depression nowadays, like many other psychiatry disorders, is still the subject of prejudice, specially among older generations, who therefore are less likely to admit suffering from it and take action into seeking help. The stigma attached to this condition makes it more likely that patients who feel the need to get treatment consult a general practitioner as opposed to a psychiatrist. This fact highlights the importance of better educating primary care doctors into not only recognizing the signs and symptoms of depression but also communicating the diagnosis in a way that is free of judgment, demystifying the preconceived ideas of what depression is. A good communication between primary care physicians and patients is in fact a crucial element in the treatment of depression. Supporting this affirmation is a study made with six rural family physicians in Nebraska that concluded that while these healthcare professionals believed that they could recognize and treat depression in an adequate manner in most cases, they felt that using the diagnosis of a depressive disorder might negatively affect the doctor–patient relationship and were therefore often reluctant to act upon the diagnosis [39]. There can also be a difficulty in the way in which the older patient expresses himself due issues in the area of communication. Diagnosing depression in a primary care setting can also be complicated by the presence of time constraints and the presence of other health problems that compete for clinical attention and/or complicate the diagnosis [24]. Also important to consider as a possible step back on the accuracy of the diagnosis of depression is the role of somatisation and the role of hypochondriasis. Somatisation can often be a symptom of a depressive disorder that may not be recognized as such, leading to unnecessary exams, treatments and even iatrogenic disease. At the same time, some symptoms presented in patients with depressive disorder can be wrongly viewed as somatic instead of being attributed to a comorbid disease.

Hypochondriasis, in which contrary to somatization patients attribute normal sensations to symptoms of an illness, can also be caused by the presence of depression among elderly patients [39].

Still on the topic of reaching an accurate diagnosis of late life depression, the risk of suicide among depressed elderly patients is an extremely important factor to consider. When compared to the general population, the rates of suicide in older individuals are twice as high. It was also found to be true that 80% of the people who commit suicide by the time they are aged 74 years or older presented depressive syndromes and that elderly people are more likely to die as a result of a suicide attempt than other age group. Furthermore, although suicidal thoughts are more frequent in younger patients, when they do exist later in life the risk of suicide is significantly higher [24]. Considering all this facts, it becomes clear that correctly diagnosing and treating late life depression is extremely important.

In order to do an adequate medical interview, accessing as much relevant information as possible, a number of factors must be taken into account. First, the place of the interview should be calm, warm and free of disruptive noises, offering some privacy to the patient. If the interview is being conducted in a context of an hospitalization it should be done at a time when ward routines are not being conducted. Older patients often have cognitive and sensorial deficits, such as hearing problems, and therefore doctors should take that in consideration when expressing themselves, paying attention to sentence structure when communicating critical information, asking open-ended questions and facing the patients when speaking with them, with the lips at the same level as theirs. Also important is selecting the right healthcare professional to conduct the interview as elderly patients are more likely to convey relevant and information to an already known doctor or nurse. Speaking to relatives, friends and caretakers can also provide useful information [39]. The history should be as detailed as possible and include the use and possible abuse of prescription medications, illicit drugs and

alcohol consumption. The sexual history, particularly the presence of a loss or change in sexual activity should also be included as it may be a sign of anhedonia. Because of the suicide risk discussed above it is also important to assess said risk if the patient admits to having suicidal thoughts. This assessment can be done by asking, for example, about past suicide attempts and if the patient has any access to weapons at home [40].

Following the medical history it should also be performed a complete physical exam and a careful mental status examination in order to evaluate cognitive function and mood. When the diagnosis is not clear, a laboratory workup can be requested, where it should be present a thyroid-stimulating hormone level, CBC with differential, chemistry panel including electrolytes and fasting blood glucose, B12 and folate levels and if relevant in the context, a chest film, ECG and medication levels [40].

There are some tools available to screen depression in late-life. The screening of elderly depression is useful because it is a disorder relatively hard to diagnose - for all the reasons explained above – and if left untreated, can entail a significant rate of morbidity and mortality. At the same time, if correctly diagnosed, it can be treated effectively. Therefore, it makes sense to use screening scales in order to detect elderly patients at risk for depression and further investigate, making it possible to detect and treat this condition in a timely manner. The use of these screening scales, that consist of pen and paper completion tests should follow some requirements. First, they should be completed by a healthcare professional and not by the patient himself in order to avoid lack of completion due to practical causes such as hand tremor. Second, the language used should be easy to understand, avoiding complicated medical terms. Finally, these screenings should be used in a cost-effective way, in a population with high prevalence of the disorder and followed by adequate treatment [39]. Three of the most commonly used screening scales are the Brief Assessment Schedule (BASDEC), the Geriatric Depression Scale (GDS) and the Evans Liverpool

Depression Rating Scale (ELDRS) and a brief analysis of its characteristics can be found on Table 2.

Table 2 – Examples of screening scales for late life depression

<p>Geriatric Depression Scale</p>	<ul style="list-style-type: none"> • 15 - or 30-item self-rating scale that can also be given by interview • Standard scale for use in the community • With the exception of one item on the subjective feeling of energy, somatic questions are avoided • Some of the questions can be hard to use in a general hospital in the concomitant presence of an acute illness
<p>Brief Assessment Schedule</p>	<ul style="list-style-type: none"> • Set of 19 cards with statements from the Brief Assessment Schedule printed on each • The cards are presented to the patient one at a time • Patients are required to place the cards in one of three piles: ‘true’, ‘false’ or ‘don’t know’ • Patients have to be cognitively intact and able to read
<p>Evans Liverpool Depression Rating Scale</p>	<ul style="list-style-type: none"> • Developed for use in physically ill people • Includes collateral information and explores the presence of suicidal thoughts • Questions refer to a period of 4 weeks, avoiding misdiagnosing depression on account of the presence of an acute illness

VI - Treatment

Treatment for elderly depression include pharmacological and non-pharmacological treatments and the aim of it is to reduce the depressive symptoms, to prevent suicidal thoughts and therefore reduce the risk of suicide, to improve cognitive and functional status and to prevent relapse.

Concerning the drug treatment, randomized clinical trials with older patients suffering from depression have shown that selective serotonin re-uptake inhibitors, tricyclic antidepressants and monoamine oxidase inhibitors have similar efficacy with effect sizes varying from moderate to large. Treatment efficacy does not differ from that observed among younger patients and it is observed also in elderly patients that present medical comorbidities. However, older adults with impaired executive functioning have been observed not to respond to treatment as well as younger adults do.

The non-pharmacological treatments include psychological treatments and electroconvulsive therapy (ECT).

There is a considerable number of psychological treatments available, with most of them including a behavioral activation component, that directly addresses the issue of activity limitation, with some of them focusing also the significance of the activity itself.

Other psychological treatments, for example cognitive behavioral therapy, behavioral therapy, problem-solving therapy and life review therapy, are intended to focus on the cognitions that are possibly related to the maintenance and degree of intensity of the depressive disorder.

Life review therapy was created especially for the older population but all other forms of psychological treatments used are in some way adapted for this population. Like with pharmacological treatment, randomized controlled trials show a moderate to large effect upon the use of these therapies [28]. Not many studies have been made comparing pharmacological treatment and psychotherapy on the treatment of late life depression but it appears that

although effect sizes are comparable, they might favor psychotherapy. Still, the combination between these two types of treatment is the best option for this disorder among older adults, even though the use of both of them alone is also an acceptable alternative [24].

Electroconvulsive therapy is a form of treatment that has a high rates of efficacy, with most trials having observed an improvement of more than 80% of the patients studied and is more frequently applied to elderly patients than other age groups. However, the use of this treatment in this population should be carefully considered, case by case, on account of the possible undesirable effects, that include delirium, memory loss and cardiac complications [28]. This type of treatment is especially useful in the context of a psychotic depression, being used either as a first choice treatment or in or if the pharmacological treatment is ineffective.

Finally, still on the topic of elderly depression treatment, it is important to assess beforehand the drugs that the patient is currently taking and the presence of any diseases that might act as a predisposing factor for depression and proceed with treatment of said underlying disorders and with the removal of drugs that can be harmful.

VII - Prevention

Developing prevention strategies for depression is as important in older populations as it is in the younger ones. The aim is to prevent depression among individuals who were found to be at risk, to prevent recurrence in late life or to prevent a relapse following treatment. There are several prevention strategies available. In terms of primary prevention, if the patient is at risk for vascular depression, efforts should be made in order to control hypertension and hyperlipidaemia. Managing the presence of other possible risk factors for depression can also be helpful. For example, treating sleep disturbances like insomnia can be very useful. In fact, cognitive behavioral treatments for insomnia were found to be very effective among older adults, even if patients presented with secondary insomnia or were dependent on sleep

medications [28]. Educating older patients at risk for depression on relaxation techniques, body-mind relations, cognitive restructuring, problem solving strategies and communication skills has been proven to reduce symptoms of depression. The same is true concerning the practice of physical exercise, always adapted to the needs and capabilities of the individual, and the introduction of a healthy nutrition plan.

Treating elderly patients with subsyndromal depressive symptoms in order to avoid the development of a serious depressive disorder has been proven to be an effective form of secondary prevention, with one study finding that treating all patients with subsyndromal depressive symptoms could prevent 24.6% of new depression onsets [41].

Tertiary prevention can also play an important role in elderly depression as it can be used to diminish some of the effects of the disorder. As an example, defining suicide risk among older adults that already have the diagnose of depression can effectively help to reduce suicidal thought and attempts if followed by adequate treatment [28].

VIII - Conclusion

Like it was mentioned before, the aim of this review was to assess all the information available about late life depression, with emphasis on risk and protective factors, diagnostic particularities, treatment and prevention. First of all, one can conclude that considering the relevance of the subject, there is not enough research available. Depression is a disorder with a fast growing prevalence - also rising fast in the elderly population. Therefore, it makes only sense to direct resources into learning more on the subject of late life depression.

Second, it is extremely important to highlight that depression is not a normal process of aging and healthcare professionals should be able to educate the general population on this fact. If patients, friends and family are aware that growing old does not imply feelings of sadness and anhedonia they may seek help sooner, preventing many undesirable outcomes of depression. It is also important to keep in mind that although depression is in fact less prevalent among older adults this should not be a reason to dismiss this subject as irrelevant: the outcomes of a depressive disorder in this age group can be devastating, the worst being suicide, and the common presence of different comorbidities (usual in this age) can only contribute to complicate the issue even more, with both factors worsening the gravity of one another.

The study of the possible risk factors that can precipitate or contribute to aggravate this disease is of great importance as it can help develop treatment options and, even more important, depression strategies. This review concludes that there are some substantial differences between what constitutes an important risk factor for depression in early and late life, although some factors, like gender, stay unchanged during the lifespan. The role of vascular risk factors seems to be of particular importance in late life, with researchers having now proposed a new subtype of depression concerning particularly this age group (vascular depression) and it should be studied further, as there is a possibility that it can be at least partially prevented. Other biological factors that seem to be specially relevant among older

patients are cognitive impairment and dementia and endocrinal risk factors. The role of social risk factors also varies according to the age of the onset of depression, with elderly individuals being less susceptible to some of them, like bereavement. The reasons for this fact are not yet understood, and should therefore be examined further.

All things considered, it must be understood that the development of late life depression is a complex process that involves a number of factors with multiple interactions of genetic vulnerabilities, cognitive alterations and neurobiological changes related with to the aging process, in combination with the particular type of social factors characteristic of old age. This process can also be counterbalanced by protective factors, meaning that the presence of a number of risk factors does not automatically predict the onset of a depressive disorder.

Another particularity of depressive disorders in late life is the presentation of the disease, that can be very different when compared to early life. Older adults are less likely to express feelings characteristic of someone presenting a depressed mood and more prone to suffer from cognitive changes, somatic symptoms, hypochondriasis and anhedonia. They are also less likely to seek help, as there is a stigma surrounding psychiatric diseases, especially in the oldest generations. The role of primary care facilities as being key becomes therefore evident: general practitioners should be educated to prevent, detect and treat (or refer these patients to a specialist) late life depressive syndromes as elderly individuals will probably not consult a psychiatrist. They should also be able to demystify the concept of depression, keeping an open gate of communication between doctor and patient, and, as family doctors, these healthcare professionals should also encourage an healthy lifestyle and the creation and maintenance of good support systems, always helpful when it comes to preventing depression. In order to help diagnose depression in this age group, which has been proven to be an often difficult task, healthcare professionals have screening tests available that can be used to detect at-risk individuals who require further investigation.

In relation to treatment, it should be noted that late life depression is in fact a treatable disorder and therefore it makes only sense to detect it. Available are pharmacological treatments and psychological treatments, both proven to be effective and, if indicated, can be used in combination. Also available is electroconvulsive therapy, indicated in persistent cases and in cases of psychotic depression. Its side effects, however, should be a reason to consider this treatment carefully.

Ideally however, concerning this disease, the priority should be preventing it so no treatment is required. There are general preventive measures that can be applied to the general elderly population and other specific strategies that can be used when a patient specific risk for depression is identified. As the risk of suicide is especially great in this age population, identification of suicidal ideation is key in the management of depression.

In conclusion, elderly depression is a topic with an increasingly high relevance and therefore an investment must be made into study it further and into create preventive strategies and educational plans. If this happens not only will the general life quality of the general population improve but there will also be an economical advantage, with less costs in treatment of the depressive disorders and associated comorbidities.

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