

MOOD DISORDERS AND CARDIOVASCULAR DISEASES IN OLDER PEOPLE

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Accepted August 23, 2016

An intense demographic aging phenomenon has been seen globally during the last decades. It was more intense in developing countries, including Romania. Prevalence of cardiovascular conditions and mood disorders increases with age. There is a possible correlation between these two categories of diseases in people beyond the age of 65 years. Increasing scientific data support connection between depression and cardiovascular diseases. Their association represents a complex and interactive model of physiological and behavioral processes, often difficult to decode. Many studies showed the possibility of reducing risks of cardiovascular events by treating depression. Improvement of mood disorders can significantly increase quality of life in older patients, concomitantly increasing compliance to therapies for cardiovascular conditions. A trilateral correlation between depression, type 2 diabetes mellitus and cardiovascular diseases has been identified leading to an amplification of morbidity and mortality through all these diseases. Depression increases two or three folds risk of mortality post myocardial infarction. There are many possible physiological connections between depression and cardiovascular disorders, also many behavioral connections like increased risk of smoking, high body mass index, reduced exercise, all representing possible ways of intervention. Promoting behavioral changes, including diet and regular exercise, as well as stress management, are important components of cardiac rehabilitation programs.

Keywords: depression, elderly, cardiovascular diseases.

Aging is a global phenomenon and the share of older people increased constantly, more notably during the last decades. This phenomenon is common to all countries and is more intense in developing countries, including Romania. If in 1990 around 1 in 10 people in Romania (10%) were beyond the age of 65 years, in 2008 it was estimated that 1 in 7 people were elderly (15%)¹. On the occasion of the 2011 census, 16.1% were older than 65 years (Figure 1) and 1.3% were 85 years and older. Nevertheless, one needs to take into account a situation specific for Romania during recent years: high emigration rate. Around two million Romanians live abroad, large majority being young and adult people. This added to the net increase in the percentage of older people since besides the

proper rise in the number of older people, percentage of young people and adults decreased due to emigration.

Other factors that influence demographic aging are reduced natality and increase in life expectancy at birth. If birth rate was relatively constant around 10.7 births/1,000 population between 2000 and 2007, afterwards it demonstrated a continuous decrease to 9.14 births/1,000 population in 2015².

On the other hand, life expectancy at birth increased from almost 70 years in 2000 to 74.92 years in 2015. In the same year, life expectancy in female was more than 8 years higher than in men: 78.59 years versus 71.46 years (Figure 2). This had an important effect on gender ratio in 2015: if for total population the ratio was 0.95 males/females, in the 65 years and over age group the gender ratio was 0.68 males/females².

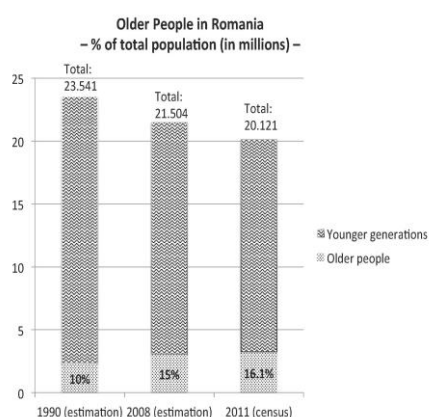


Fig. 1. Older People in Romania – prevalence in total population (in millions).

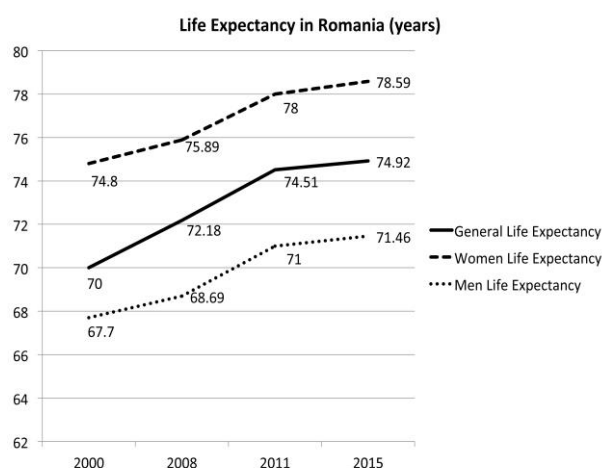


Fig. 2. Evolution of Life Expectancy in Romania – updated as for 2015.

Aging of mankind offers novel anthropological perspectives and has several effects including major changes in morbidity and new paradigms for medical and social services. Prevalence of non-communicable diseases has been increasing significantly. Cardiovascular diseases in older people represent a great burden in terms of morbidity, mortality, disability, functional decline and healthcare expenditure³. Due to the increasing percentage of older people in general population worldwide, the burden for society attributable to cardiovascular diseases is expected to escalate.

Depression is not a normal feature of aging and although is less prevalent amongst older people as compared to younger adults it has serious consequences⁴ being a major contributor to healthcare costs⁵. Moreover, depression in older

people is associated with an increased risk of disability and death. In older patients with depression cognitive and functional impairment are more common than in younger people.

Acute coronary syndromes (sudden cardiac death and myocardial infarction) can be generated by emotional distress^{6,7}. Chronic psychological and psychiatric conditions as well as social circumstances can influence the progression of cardiovascular disease⁸. Moreover, they can further enhance the risk or degree of emotion-related triggers of acute coronary syndromes, especially in patients with underlying cardiovascular disease⁶. Some authors⁹ suggested a classification of cardiovascular psychological risk factors based on the duration and temporal proximity to the occurrence of coronary syndromes. The authors identified three types of psychological risk factors that may influence cardiovascular disease: (1) **acute** that may act as triggers of cardiac events within one hour (acute distress, outbursts of anger); (2) **episodic**, lasting from several weeks to two years (*e.g.*, depression); (3) **chronic**, that promote gradual progression of coronary artery disease (personality traits and adverse socio-environmental circumstances). Episodic risk factors such as depression are associated with specific biologic and physiologic processes that play definite roles at different disease stages.

Depression is predictive of first and recurrent myocardial infarction and sudden cardiac death¹⁰. However, especially in the case of older people, depression is often under-diagnosed and consequently often untreated⁵. Multiple risk factors increase the risk of events by 3–5 fold¹¹. For example, men 60 years old with one risk factor have an approximate 1% annual risk of a coronary event. But 60 year-old men with hypertension, diabetes, and smoking have at least a 3% annual risk.

Often congestive heart failure occurs concomitantly with a depressive disorder¹², but the mechanism of this high rate comorbidity is less understood yet. Several risk factors are involved including severity of each condition (depression and congestive heart failure), a past history of depressive disorder and presence of social support network. The presence of these two disorders in the same patient increases the risk of hospitalization and mortality. Healthcare utilization and costs are significantly influenced by coexistence of congestive heart failure and depression. In both congestive heart failure and depression several

common biological abnormalities have been identified. However, the connections between the two conditions are not explained for the time being. Another important aspect is that treatment of depressive disorder in an older patient does not influence the course or prognosis of congestive heart failure. This suggests that the two conditions are linked by pathophysiologic mechanisms that might not be influenced by the treatment of depression.

The most common cause of sudden cardiac death is ventricular arrhythmia. Major depression has been often associated with a higher risk of sudden cardiac death¹³. Depression, anxiety and social isolation each predict independently mortality by sudden cardiac arrest. Several medicines used for the treatment of psychiatric disorders increase the risk of sudden death. Some of them act through prolongation of QT interval with resultant increase in the risk of torsade de pointes: first generation antipsychotics (haloperidol) and second generation antipsychotic medications (risperidone, olanzapine), and tricyclic antidepressants.

The impact of sleep quality and pattern is increasingly being linked to cardiovascular conditions. There are several direct consequences of sleep disorders: decreased professional efficiency, car accidents and increased consumption of healthcare services¹⁴. Insomnia may contribute to increased cardiovascular risk including occurrence of hypertension and diabetes mellitus and is often associated with a higher risk of strokes and acute coronary events. Often sleep disorders, including insomnia, are secondary to depression, but they are frequently ignored, overlooked or misdiagnosed.

There is a manifold relationship between emotions and cardiovascular system in humans¹⁵. Both negative and positive emotions can impact on cardiovascular risk. A variety of adverse cardiovascular events have been attributed to increased adrenergic activity generated by negative emotions. Exposure to depression has been associated with decreased endothelial vasoreactivity as measured by brachial artery reactivity test. Major depression is significantly associated with poor cardiovascular outcomes¹⁶. Even patients with subclinical depression or increased psychological distress have a high risk of adverse cardiovascular events.

Depressive disorders represent significant risk factors both for initial and recurrent cardiovascular events, including coronary heart disease and stroke^{17,18}. Use of antidepressants was associated

with a lower risk of myocardial infarction both in middle-aged and older adults¹⁹. Depression is encountered in almost 50% of patients prior to a myocardial infarction and in 80% of patients after they have sustained a myocardial infarction. Depression up-regulates systemic inflammatory cytokines, platelet activation, raises blood pressure and activates sympathetic nervous system activity²⁰.

More and more scientific data support connection between depression and cardiovascular diseases. Their association represents a complex and interactive model of physiological and behavioral processes, often difficult to decode. However, several goals for therapeutic interventions can be highlighted. There are many studies that showed the possibility of reducing the risk of cardiovascular events by treating depression. On the other hand, improvement of mood disorders can significantly increase the quality of life of older patients, in the same time increasing the compliance to various therapies used for cardiovascular conditions. A trilateral correlation between depression, type 2 diabetes mellitus and cardiovascular diseases has been identified leading to an amplification of morbidity and mortality through all these three categories of diseases. Depression increases two or three folds the risk of mortality post myocardial infarction. There are many possible physiological connections between depression and cardiovascular disorders, as well as many behavioral connections like increased risk of smoking, high body mass index, reduced exercise, all representing possible ways of intervention. Promoting behavioral changes, including improved diet and stimulating regular exercise, as well as stress management, are important components of cardiac rehabilitation programs including for older people.

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