SUCCESSFUL COGNITIVE AGING-PREREQUISITE OF AN IMPROVED QUALITY OF LIFE IN ELDERLY PATIENTS

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ABSTRACT
Addressing the demographic challenges is among the basic political and social priorities of the European Union. The multidimensional problems of advanced and late age (biological, psychological, socio-economic, cultural, etc.) are subject of profound research. The main characteristic of cognitive functions as people age is the variability. The cognitive deficits interfere with in everyday activities and present a significant decline from a previous level of performance. Promoting successful cognitive aging is a topic of profound importance to both individuals and the society.

KEYWORDS: cognition, successful active and cognitive aging.

INTRODUCTION
According to the data from the National Statistical Institute (2011)¹¹ people 65 years of age and older are the fastest growing segment of population in Bulgaria. Most of older adults enjoy good mental health. Others fall in the border zone between normality and dementia. However, it is anticipated that number of older adults with mental and behavioral health problems will progressively grow. The increasing proportion of people over 65 poses problems for the social assistance services, health and education. Multidimensional problems of advanced and late age (biological, psychological, socio-economic, cultural, etc.) are subjects to extensive research. To promote active aging health systems must take action focused on health promotion, disease prevention and equal access to qualified primary long
term care and long term. Adopting a healthy lifestyle and activity are important behavioral determinants throughout life. Physical activity, rational diet, smoking and alcohol avoidance, rational use of drugs can prevent disease and functional decline, increase duration of life and improve quality of life (WHO, 2002).[2]

Aging in humans is a natural, biological process that is genetically programmed and influenced by economic and environment factors. Age-related functional decline has cognitive and physical aspects related to risk and protective factors. Cognitive performance is known to change over age 45, especially processing speed. There is a continuum between normal and pathological cognitive aging (Thal et al., 2004; Drachman, 2006; Kramer et al., 2007).[3,4,5] Some authors point out that cognitive abilities, such as vocabulary, are resilient to brain aging and may even improve with age while conceptual reasoning, memory, and processing speed, decline gradually over time (Harada et al., 2013).[6]

The trend is screening for people with mild cognitive impairment (MCI). MCI is characterized by abnormal cognitive functions that represent a decline from previous levels, but do not meet criteria for dementia and did not affect daily functioning (Petersen, Doody et al., 2001; Petersen, 2004; Steffens et al., 2006; Petersen, 2011).[7,8,9,10] Individuals with MCI progress to clinically expressed probable Alzheimer's disease (AD) significantly faster than healthy subjects of the same age. Around 8-15% of MCI patients advance annually AD (Bennett DA et al., 2002; Albert et al., 2011; Petersen, 2016).[11,12,13] Some authors present data for a high risk of progressing to dementia of MCI cases, including those who revert to cognitively normal. This suggests that diagnosis of MCI at any time has prognostic value (Roberts et al., 2014).[14]

According to some authors, in adults cognition is more influenced by external factors. Others support the view that genetic factors influence towards accelerating changes (Deary et al., 2000; Steves et al., 2013).[15,16] However, the relationship between brain changes and cognitive functions is complex. Changes in attention domain seriously affect the ability to perform certain activities of daily living (McDowd et Shaw, 2000; Park et Gutchess, 2000).[17,18]

The most important characteristic of cognitive function in advanced and old age is variability (Glisky, 2007; Wisdom et al., 2012).[19, 20] Cognitive decline is not inevitable. We pay attention to the aging process and the so-called successful cognitive aging, which could be
also determined as avoidance of development of mild or more severe cognitive disorders (dementia). The promotion of successful cognitive aging is an important problem for individuals and society. It includes preventing the loss of capacity of the speed of information and enhance brain and cognitive reserve capacity (Daffner, 2010).\textsuperscript{[21]} Strategies to improve cognitive functioning include pharmacological and behavioral interventions. Innovative cognitive enhancing therapies for improving function and quality of life for individuals, suffering from cognitive impairment due to cognitive aging or AD are required. An important problem in this area is that despite multiple theories of aging currently there is no consensus on this issue (Jin, 2010).\textsuperscript{[22]}

\textbf{AIM:} To trace the market shares of some mostly used and included in treatment guidelines in Bulgaria cognitive- enhancing pharmacological products (CEPP’s) in advanced age, which we divided to two pharmacological dimensions: transmitter replacement strategies (to improve, temporally stabilize or slow the rate of cognitive decline) and disease-modifying agents (to reduce progression).

\textbf{METHOD:} Data for the sales for 2016 was collected, followed by analysis of the percentage share distribution, secondary analysis of market data, correlation analysis between original and generic products, distribution of market shares, in response to the national drug policy to encourage generic use.

\textbf{SUMMARY OF RESULTS:} The pharmaceutical market offers a wide range of products, developed on the basis of various theories of aging and pathogenesis of NCD’s, directed to important cognitive domains such as learning, attention and memory. Cognitive enhancers were prescribed mostly for Mild or Major NCD of Alzheimer’s and Vascular type. The market shares for original products of donepezil hydrochloride and memantine hydrochloride constitute 4% respectively 8%, while for their generics- 96%, respectively 92%. The predominant role of generic products is consistent with the key priorities of pharmaceutical industry as maintaining access, quality, benefits, sustainability and partnership. Use of generic drugs is cost saving and improves patients’ choice and access to treatment.

The market shares of some other cognitive protectors and antioxidants included in the group of disease-modifying agents occupy 31.8% market shares. Out of them the sales for vinpocetine and nicergoline group are comparatively equal (about 12-14%); for Piracetam (Nootropil)- 19.88%. The sales of Ginkgo biloba products are about 12%.
According to the National Consensus on dementia diagnosis, treatment and care (2015)\(^{23}\) the group of disease-modifying agents is included in the recommendations of management of AD as second choice, while vinpocetine and nicergoline in VaD as first line.

Ginkgo biloba products are prescribed for memory impaired patients based on the idea that improve blood and oxygen to the brain and support memory function, mental sharpness and circulation. An important problem is the insufficient data for the long term effect of such treatment and whether it manages to slow down the progression to dementia.

While for Major NCD the criteria are stated, milder cognitive disturbances are left to physician expertise and decision because pharmacological treatment for MCI is not officially approved (Lin et al., 2012).\(^{24}\) Some people with MCI never get worse. Some cognitive protectors and antioxidants have been reported to help prevent or delay the progression of MCI. However, no supplement has shown any benefit in a clinical trial (Langa & Levine, 2014).\(^{25}\) Currently, no mild cognitive impairment (MCI) drugs or other treatments are specifically approved by the authorities. Nevertheless, to our opinion, PP’s that are mostly examined for their potential to protect the brain or enhance cognitive functions have to be tried. A thorough diagnostic evaluation and assessment of cognitive deficit determines the therapeutic approach. For more serious cognitive deficits which still are not diagnosed as dementia, cognitive protectors and antioxidants could be applied after obtained informed consent. Cognitive decline is assessed and followed in 6 months. Strategizes to optimize pharmacotherapy are considered when therapeutic result is lacking or more severe cognitive decline is going on. Important considerations are dosing, adjustments, duration of treatment, side effects. Concerning delivery, the approach should assess the characteristics of the product – half-life, route of administration, linear or nonlinear dose relationship, etc. Duration of drug administration depends on treatment goals, therapeutic response, tolerability, side effects, cost, etc.

Drug-drug interactions (combinations of drugs including over-the-counter drugs and prescribed drugs) along with medications taken incorrectly can cause confusion. Drug toxicity is one of the most common causes of confusion in older people. The risk-benefit ratio seems useful.

The judgment about response to treatment depends on the cognitive disturbances and on expectations of the patients, their families and the prescribing physician. Mild improvement
or stabilization with transmitter replacement strategies is considered an appropriate and realistic goal with these medications (Massoud et al., 2010).[26]

CONCLUSION

Promoting successful cognitive aging is a topic of profound importance to both individuals and the society. The early research on the causes of cognitive decline and early interventions with drugs, if not prevent, delay the process.

REFERENCES


