

Neurokognitivni poremećaji – kako možemo smanjiti rizik

/ Neurocognitive Disorders – How Can We Reduce the Risk

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Demencija spada u bolesti s najvećom prevalencijom poslije kardiovaskularnih, cerebrovaskularnih bolesti te malignih bolesti. Smatra se da u svijetu ima oko 50 milijuna osoba s demencijom, a procjenjuje se da će ih 2050. godine biti čak 115 milijuna. U smanjenju razvoja demencije, kada je riječ o osobama treće dobi, od ključnog je značenja nastavak njihove mentalne aktivnosti (tzv. mentalni fitnes). Vrlo je korisno kada se (stariji) ljudi redovito bave nekim društvenim igrama, različitim mozgalicama, križaljka, sudokuom, rebusima i slično, jer sve to služi i kao svojevrsan kognitivni trening.

/ Dementia is one of diseases with highest prevalence after cardiovascular and cerebrovascular diseases, and malignant diseases. There are an estimated 50 million people with dementia in the world, with an estimated 2050 year to be as much as 115 million. In reducing the development of dementia, when it comes to older people, it is crucial meanings the continuation of their mental activity (so-called mental fitness). It is very useful when (older) people get on a regular basis engage in some board games, different puzzles, crossword puzzles, sudoku, rebuses and the like, because it all serves as a kind of cognitive training.

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Alzheimerova bolest (AB) najčešći je uzrok demencije. S obzirom na to da je AB još uvijek neizlječiv, mnogo se pozornosti obraća identifikaciji rizičnih čimbenika u nastanku demencije (2). Postoji više rizika na koje se može bitno utjecati. Uočeno je da osobe koje su imale težu ozljedu glave, poglavito ako su pritom ostale i bez svijesti, češće razviju AB. Nedavna studija potvrdila je da oboljeli od dijabetesa (posebno tipa 2), a stariji su od 60 godina, dvostruko češće oboljevaju od te bolesti. Smatra se da 80 % osoba s AB-om boluje i od kardiovaskularnih bolesti, a visoki kolesterol smatra se rizičnim faktorom. Visok krvni tlak također pogoduje nastanku AB-a, ali kao i svi drugi rizici za nastanak srčanih bolesti. Prototip zdrave prehrane je mediteranska hrana (riba, maslinovo ulje, cjelovite žitarice, crveno i ljubičasto voće i povrće, orašasti plodovi) (3). Demencije su sindrom u sklopu raznih skupina organskih bolesti centralnog nervnog sistema, najčešće neurodegenerativnih, u okviru kojih dolazi do stečenog progresivnog oštećenja kognitivnih funkcija, udruženih s promjenama ličnosti dovoljnog stupnja da utječu na socijalno ponašanje i profesionalnu aktivnost (4,5). Prevalencija demencija postaje značajna u osoba starijih od 60 godina kada se udvostruči svakih pet godina života. Incidencija demencija iznosi 5,4 - 9,4 % godišnje, a u populaciji osoba starijih od 85 godina čak 30-35 % (6). Naziv demencija potječe od latinskog *dementia* što doslovno znači „bezumnost, ludilo“. Prvi ga je upotrijebio Celsus (10 g. n. e), ali u kontekstu druge bolesti – prema opisu kliničke slike riječ je o maniji. I pored duge povijesti poznavanja problema kognitivnog propadanja u starijih osoba, tek je početkom prošlog stoljeća ono povezano sa

Dementia is one of the diseases with the highest prevalence after cardiovascular and cerebrovascular diseases and malignant diseases. It is believed that there are about 50 million persons with dementia in the world and it is estimated this number will rise to 115 million by the year 2050 (1). Alzheimer's disease (AD) is the most common cause of dementia. Since AD is still incurable, a lot of attention has been dedicated to the identification of risk factors for the onset of dementia (2). There are several risks that can be significantly influential. It has been noted that persons with severe head trauma, especially those that lost consciousness during the incident, develop AD more frequently. Recent studies have confirmed that people with diabetes (especially type 2) older than 60 years of age develop that illness twice as often. It is believed that 80% of persons with AD also have cardiovascular diseases, and high cholesterol is considered a risk factor. High blood pressure also adds to the development of AD and cardiac disease, as do all the other risk factors. A prototype of healthy food is Mediterranean food (fish, olive oil, integral wheat, red and violet fruits and vegetables) (3). Dementia is a syndrome in different groups of organic diseases of the central nervous system, most often neurodegenerative ones, leading to acquired progressive damage of cognitive functions together with personality changes of sufficient level to influence social behaviour and professional activity (4,5). The prevalence of dementia becomes significant in persons older than 60 years of age, when it doubles every five years. The incidence of dementia is 5.4–9.4% per year, and in the population of persons older than 85 years of age it is even 30-35% (6). The term dementia comes from Latin *dementia*, which literally means “insanity, madness”. It was first used by Celsus (10 AD) but in the context of another illness – according to the description of the clinical picture it was mania. Although cognitive decline in older persons has been recognized

specifičnim patološko anatomskim supstratom. Njemački patolog i neurolog Alois Alzheimer je 1906. godine opisao slučaj progresivnog mentalnog propadanja 51-godišnje bolesnice i povezo ga sa specifičnim histološkim promjenama u mozgu, tzv. senilnim plakovima. Tek 70-tih godina prošlog stoljeća usvaja se stav da ne postoje nikakve bitne strukturne, histopatološke, biokemijske, a ni razlike u kliničkoj prezentaciji Alzheimerove i tzv. senilne demencije. Tako je Alzheimerova bolest (AB), samim tim i demencija općenito, prepoznata kao veliki medicinski i društveni problem (7). Predviđanja da će demencija biti jedan od vodećih medicinskih i društvenih problema potvrđuju se i podacima da jedna trećina oboljelih nije sposobna ni za kakav oblik samostalnog života kao i da svjetska populacija produženjem prosječnog ljudskog vijeka i sve nižim stopama nataliteta kontinuirano stari (5). Danas je poznato kako su bolesnici s cerebrovaskularnim čimbenicima rizika u većoj opasnosti od razvoja obih tipova neurokognitivnog propadanja (8). Sve se veća pozornost u neurologiji i psihijatriji obraća problemu demencije, i to u znanstvenom i kliničkom aspektu. Nove dijagnostičke metode, te izgledi za uspješnu prevenciju i liječenje prenijeli su zanimanje medicine s fenomenološkog na etiološki, organski aspekt (8).

Prema Dijagnostičkom i statističkom priručniku za duševne poremećaje DSM-5 naziv velikog neurokognitivnog poremećaja primjereniji je od naziva demencija kod osoba sa značajnim oštećenjem koje može biti u samo jednoj kognitivnoj domeni (9). Naziv neurokognitivni poremećaj ima prednost i kod osoba mlađe životne dobi kod kojih je došlo do oštećenja kognitivnog funkcioniranja nakon, primjerice, traumatske ozljede mozga ili infekcije HIV-om (10).

Vaskularna demencija nastaje kao posljedica progresivne aterosklerotske bolesti malih krvnih žila mozga uz posljedične višestruke manje moždane udare i oštećenje moždanog parenhima. Oko 10 – 20 % slučajeva demencije

for a long time, it was only associated with a specific pathological anatomic substrate at the beginning of the previous century. German pathologist and neurologist Alois Alzheimer described a case of progressive mental decline in a 51-year-old patient in 1906 and connected it with specific histological changes in the brain, so-called senile plaques. It was not until the 1970s that the opinion that there were no significant structural, histopathological, biochemical, and clinical differences between AD and so-called senile dementia was adopted. AD, and dementia in general, was recognized as a serious medical and social problem (7). Projections that dementia would be one of the leading medical and social problems have also been confirmed by data according to which 1/3 of patients is incapable of any sort of independent life and that the world population is continuously aging alongside the extension of average life expectancy and decreasing birth rates (5). Today it is known that patients with cerebrovascular risk factors are in greater danger of developing of both types of neurocognitive decline (8). In neurology and psychiatry, attention has increasingly been dedicated to the problem of dementia, in both the scientific and clinical aspects. New diagnostic methods and prospects for successful prevention and treatment have transferred medical interest from the phenomenological to the etiological, organic aspect (8). According to DSM-5, the term “major neurocognitive disorder” is more convenient than the term dementia in people with significant damage that may be present in only one cognitive domain (9). The term “neurocognitive disorder” also has advantages in the case of younger people with damage in cognitive functioning, e.g. following a traumatic brain injury or HIV infection (10).

Vascular dementia occurs as a consequence of the progressive atherosclerotic illness of small blood vessels of the brain, with consequential multiple smaller brain strokes and damage of

pripisuje se vaskularnoj demenciji. Preživljenje bolesnika s vaskularnom demencijom znatno je smanjeno (39 %) unutar 5 godina u usporedbi s kontrolnom skupinom standardiziranom prema dobi (11). Dokazana je povezanost šećerne bolesti i kognitivnog propadanja u bolesnika sa šećernom bolesti koja traje 10 godina i duže, naročito u slučaju pojavnosti dijabetesa prije 65. godine života, liječenja inzulinom ili oralnom antidijabetičkom terapijom te prisutnosti komplikacija dijabetesa. Također, u bolesnika koji su preboljeli moždani udar postoji povećana pojavnost prethodno ili tijekom hospitalizacije postavljene dijagnoze šećerne bolesti (16 – 24 %) (12).

Prevenција je i dalje najbolji pristup moždanom udaru odnosno posljedičnoj vaskularnoj demenciji. Cilj prevencije jest smanjiti rizik od nastanka moždanog udara djelovanjem na čimbenike rizika (13,14). Najčešći čimbenici rizika uključuju hipertenziju, povišene vrijednosti lipida u serumu, infarkt miokarda, atrijsku fibrilaciju i karotidnu stenozu, šećernu bolest, pušenje i konzumiranje alkohola, neprimjerenu prehranu te smanjenu tjelesnu aktivnost. Međutim, u posljednje se vrijeme sve više pozornosti obraća novim čimbenicima rizika za nastanak moždanog udara kao što su frakcije lipida, subklinička karotidna bolest, zadebljanje intime i medije karotidnih arterija, povećani indeks tjelesne mase, povećani omjer struk/bokovi, infekcije i upale, hiperhomocisteinemija, genski čimbenici. jer klasičnim se čimbenicima rizika ne može objasniti nastanak velikog broja moždanih udara (15-17). Unatoč napretku u području akutne terapije moždanog udara, prevencija je i dalje najbolji pristup moždanom udaru. Preventivne akcije mogu se temeljiti na "masovnom pristupu" naglašavajući promjenu nezdravoga u zdrav način života. Ovo uključuje adekvatnu prehranu sa smanjenim unosom soli, zasićenih masti i kolesterola, prestanak pušenja, smanjenje ekscesivnog pijenja alkohola, povećanje tjelesne aktivnosti. Masovnim

the brain tissue. About 10-20% of cases of dementia are attributed to vascular dementia.

Life expectancy of patients with vascular dementia is significantly reduced (39%) within 5 years in comparison with the control group standardized according to age (11). The correlation between diabetes mellitus and cognitive decline in patients with diabetes mellitus which has lasted for 10 years or longer has been proved, especially in the case of onset of diabetes before 65 years of age, insulin treatment or oral antidiabetic therapy, and the presence of complications related to diabetes. Also, there is increased occurrence of diabetes mellitus during hospitalisation or prior to it in patients who suffered a stroke (16-24%) (12). Prevention is still the best approach to stroke and consequential vascular dementia. The aim of prevention is to decrease the risk of stroke by influencing risk factors (13,14). The most common risk factors include hypertension, elevated serum lipid values, myocardial infarction, atrial fibrillation, and carotid stenosis, diabetes mellitus, smoking and alcohol consumption, inappropriate diet and reduced physical activity. Lately, attention has increasingly been dedicated to new risk factors for stroke such as lipid fractions, subclinical carotid illness, increased body mass index, increased waist/hips ratio, infections and inflammation, hypercholesterinaemia, and genetic factors because the occurrence of a large number of strokes cannot be explained by traditional risk factors (15-17). Despite the progress in the field of acute treatment of stroke, prevention still represents the best approach to stroke. Preventive actions can be based on a "massive approach" emphasising changes from an unhealthy to a healthy lifestyle. This includes adequate diet with reduced intake of salt, saturated fats, and cholesterol, cessation of smoking, reduction of excessive alcohol consumption, and increased physical activity. The massive approach can achieve a moderate reduction of risk factors in the en-

pristupom moguće je postići umjereno smanjivanje čimbenika rizika u cijeloj populaciji. Za provedbu masovnog pristupa nužno je potrebna edukacija stanovništva suradnjom sa sredstvima masovnog priopćavanja – novine, radio, televizija, zakonodavne i ekonomske mjere (18-20) i sl. „Visokorizični” pristup temelji se na identifikaciji osoba u zajednici koje imaju visok rizik za nastanak moždanog udara i zatim smanjivanje njihovih čimbenika rizika, što najčešće zahtijeva liječenje. U praksi se najčešće primjenjuju oba pristupa prevenciji moždanog udara – i masovni i visokorizični pristup – na ovaj način postižu se najbolji rezultati (21).

Pušenje cigareta značajno pridonosi učestalosti moždanog udara i rizični je čimbenik za mnoge druge bolesti i stanja (22). Meta-analiza 32 studije pokazala je kako pušenje povisuje rizik nastanka moždanog udara za 50 %. Također, pokazana je ovisnost o dozi: rizik nastanka moždanog udara povećava se s brojem popušanih cigareta (23). U Framinghamskoj studiji pokazana je negativna povezanost tjelesne aktivnosti i učestalosti moždanog udara u muškoj populaciji (24). Smatra se da je povoljan učinak povećane tjelesne aktivnosti na snižavanje rizika za nastanak moždanog udara posljedica učinka na snižavanje povišenih vrijednosti tlaka, smanjivanje tjelesne težine i poboljšanja tolerancije glukoze. Također, povećana tjelesna aktivnost dovodi do povišenja HDL-kolesterola i snižavanja LDL-kolesterola te do promocije zdravoga načina življenja (21). Zloporaba alkohola svakako je značajan čimbenik rizika za nastanak moždanog udara. Istraživanja pokazuju da su krvne žile alkoholičara prosječno deset godina starije od njegove biološke starosti (25).

Upotreba kokaina, pogotovo u njegovom alkaloidnom obliku (“*crack*”), povezana je s povećanom učestalošću cerebrovaskularne bolesti, kako ishemijske tako i hemoragijske (26). Rizik nastanka moždanog udara povećan je u žena koje uzimaju oralne kontraceptive, pogotovo oralne kontraceptive s visokim sadržajem

pire populacije. In order to implement a massive approach, it is necessary to educate the population through cooperation with the mass media - newspapers, radio, television – and use legislative and economic measures (18-20). The “high-risk” approach is based on the identification of community members who have a high risk for stroke and the reduction of their risk factors, which most often requires treatment. In practise, both of the approaches for the prevention of stroke – the massive and the high-risk approach – are applied and in this way the best results are achieved (21). Cigarette smoking significantly contributes to the frequency of stroke and is a risk factor for many other diseases and conditions (22). A meta-analysis of 32 studies showed that smoking increases risk of stroke by 50%. Dependence on dosage was also found: the risk of stroke increases with the number of cigarettes smoked (23). In the Framingham study, a negative correlation between physical activity and frequency of stroke in the male population was discovered (24). It is believed that the beneficial effect of increased physical activity on decreasing the risk of stroke is the consequence of effect on reducing high blood pressure, reduction of body weight, and improvement of glucose tolerance. Also, increased physical activity leads to the increase of HDL-cholesterol and decrease of LDL-cholesterol and the promotion of a healthy lifestyle (21). Alcohol abuse certainly represents a significant risk factor for stroke. Studies have shown that the blood vessels of alcoholics are on average ten years older than their biological age (25). Cocaine use, especially in its alkaloid form (“*crack*”), is connected with an increased frequency of cerebrovascular illness, ischemic as well as haemorrhagic (26). Risk of stroke is increased in women who take oral contraceptives, especially oral contraceptives with a high amount of estrogen. It has been proved that taking oral contraceptives increases the risk of stroke in women as their age increases (women older than 35 years of age) and in women

estrogena. Dokazano je kako uzimanje oralnih kontraceptiva povećava rizik nastanka moždanog udara u žena s povećanjem dobi (žene starije od 35 godina) te u žena koje imaju i druge čimbenike rizika, a osobito hipertenziju i pušenje. Oralni kontraceptivi povezani su i s povećanjem rizika subarahnoidnog krvarenja, što je posebno izraženo u žena koje imaju i hipertenziju (27). Učestalost moždanog udara povećava se kod povišenoga dijastoličkog i sistoličkog tlaka. Učestalost moždanog udara raste 46 % za svakih 7,5 mm Hg porasta dijastoličkog tlaka (28). Fibrilacija atriya jedan je od najznačajnijih neovisnih čimbenika rizika za nastanak moždanog udara; povišuje učestalost moždanog udara otprilike pet puta za prvi moždani udar. Kontrolirane kliničke studije pokazale su kako se primjenom peroralnih antikoagulansa (varfarin) može smanjiti rizik nastanka moždanog udara u bolesnika s fibrilacijom atriya za otprilike 70 % (29). Podatci iz novijih studija pokazuju kako postoji povezanost između povišenih vrijednosti kolesterola i učestalosti moždanog udara. U posljednje vrijeme spominju se i povišeni trigliceridi kao neovisan čimbenik rizika za nastanak moždanog udara (21). Sve više se govori i o frakcijama lipoproteina kao neovisnom čimbeniku rizika za nastanak moždanog udara. Tako se spominju apolipoprotein B (Apo B) koji je aterogen i povezan je s LDL-kolesterolom te apolipoprotein A (Apo A), koji je antiaterogen i povezan s HDL-kolesterolom. Omjer Apo B/Apo A veći od 1 značajan je čimbenik rizika za nastanak moždanog udara. Vrijednosti lipoproteina veće od 30 mg/dl povećavaju rizik za nastanak moždanog udara 1,8 puta (21). Šećerna bolest je neovisni čimbenik rizika za nastanak ateroskleroze i moždanog udara. U osoba sa šećernom bolešću utvrđena je dvostruko viša smrtnost nakon ishemijskog moždanog udara u odnosu na osobe bez šećerne bolesti (22). Značajna stenoza karotidne arterije povezana je s izraženim rizikom nastanka ipsilateralnog moždanog udara. Homocistein je produkt proteinskog metabo-

who have other risk factors, especially hypertension and smoking. Oral contraceptives are also associated with an increase in the risk of subarachnoid haemorrhage, which is especially pronounced in women with hypertension (27). The frequency of stroke increases with elevated diastolic and systolic pressure. The frequency of stroke increases by 46% for each 7.5 mmHg of increase in diastolic pressure (28). Atrial fibrillation is one of the most significant independent risk factors for stroke; it increases the frequency of stroke by approximately 5 times for the first stroke. Controlled clinical studies have shown that the application of peroral anticoagulants may reduce the risk for stroke in patients with atrial fibrillation by approximately 70% (29). Data from newer studies show the existence of correlation between elevated values of cholesterol and frequency of stroke. Lately, elevated triglycerides have been mentioned as an independent risk factor of stroke (21). Lipoprotein fractions are also increasingly mentioned as an independent risk factor for stroke. These include apolipoprotein B (Apo B), which is atherogenic and associated with LDL cholesterol, and apolipoprotein A (Apo A), which is antiatherogenic and associated with HDL cholesterol. The Apo B/Apo A ratio higher than 1 is a significant risk factor for stroke. Lipoprotein values higher than 30 mg/dl increase the risk for stroke by 1.8 (21,30). Diabetes mellitus represents an independent risk factor for atherosclerosis and stroke. In people with diabetes mellitus, the mortality rates after an ischemic stroke were twice as high than those in persons without diabetes mellitus (22). Significant stenosis of carotid artery is associated with pronounced risk for ipsilateral stroke. Homocysteine is a product of protein metabolism. Several studies have shown a correlation between increased values of total homocysteine and the frequency of vascular diseases and stroke (22). Taking into consideration an increase in risk behaviour of the population, such as smoking, reduced physical activity, and

lizma. Nekoliko studija pokazalo je povezanost između povišenih vrijednosti ukupnog homocisteina te učestalosti vaskularnih bolesti i moždanog udara (22).

Uzimajući u obzir sve rizičnije ponašanje populacije, koje čine pušenje, smanjena tjelesna aktivnost i nepravilna prehrana, potrebno je u što ranijoj životnoj dobi započeti s mjerama prevencije rizičnih čimbenika za nastanak kardiovaskularnih bolesti uz istodobno promicanje zdravog načina života (30). Kardiovaskularne bolesti vodeći su uzrok morbiditeta i mortaliteta, kako u razvijenim zemljama, tako i u Republici Hrvatskoj. Tako velika pojavnost vezana je uz današnji način života i loše životne navike, kao što su pušenje, nepravilna prehrana, pretjerana konzumacija alkohola i tjelesna neaktivnost, koje dovode do pretilosti, povišenog tlaka i povišenih vrijednosti masnoća u krvi (31). Prevenciju treba provoditi na razini promicanja zdravlja javnozdravstvenim modelom edukacije stanovništva i čuvanja okoliša te primarne i sekundarne prevencije. Cilj je primarne prevencije rana detekcija čimbenika rizika, a sekundarne prevencije liječenje pojedinih čimbenika i usporavanje razvoja ateroskleroze, što je osnovna patološka promjena u kardiovaskularnim bolestima (31).

Izloženost stresnim situacijama, posebno stresnim situacijama visokog intenziteta, nepovoljno utječe na zdravlje pa je tako i rizični čimbenik za razvoj neurokognitivnih poremećaja (32). Reakcija na stres povećava agregaciju trombocita, aktivira renin-angiotenzin sistem te na taj način povećava stvaranje angiotenzina II, koji povisuje krvni tlak. Stoga stres uzrokuje povećanu učestalost kardiovaskularnih i cerebrovaskularnih bolesti. Međutim, postoje poteškoće u točnom definiranju stresa i u načinu mjerenja "jačine" stresa. Objavljeno je svega nekoliko radova o utjecaju stresa na učestalost moždanog udara, a većina članaka opisuje utjecaj stresa povezanog s ratnim zbivanjima i učestalosti moždanog udara (26).

an inadequate diet, it is necessary to begin to implement prevention measures for risk factors for cardiovascular diseases as early in life as possible, while simultaneously promoting a healthy lifestyle (30). Cardiovascular diseases are a leading cause of morbidity and mortality in developed countries, which also holds true for Croatia.

This high occurrence is linked to the modern way of life and poor life habits such as smoking, an inadequate diet, excessive alcohol consumption, and physical inactivity, all of which lead to obesity, high blood pressure and high values of cholesterol in blood (31). Prevention should be implemented at the level promoting health through a public health model of population education and environmental protection; and primary and secondary prevention. The goal of primary prevention is early detection of risk factors, and secondary prevention is the treatment of individual ones factors and retardation of atherosclerosis, which is the underlying pathological change in cardiovascular disease (31). Exposure to stressful situations, particularly stressful situation of high intensity, influences health negatively and therefore also presents a risk factor for neurocognitive disorders (32). Reaction to stress increases aggregation of thrombocytes, activates the renin-angiotensin system and thereby increases the production of angiotensin II, which increases blood pressure.

Therefore, stress causes increased frequency of cardiovascular and cerebrovascular diseases.

However, there are difficulties in accurately defining stress and in mode measuring the "strength" of stress. Everything was published several papers discuss the impact of stress on stroke frequency, and most articles describe it the impact of stress associated with war events and stroke frequency (26). Although we are unable to influence the causes of stress, we can influence the way we cope with stress. Coping refers to behaviour and mental reactions by

Iako često ne možemo utjecati na uzroke stresa, možemo utjecati na to kako ćemo se suočiti sa stresom. Suočavanje se odnosi na ponašanje i psihičke reakcije kojima pojedinac nastoji svladati ili ublažiti pritiske izazvane prijetećom situacijom. Zdrav način života, odnosno mjere za poboljšanje zdravlja, dovode i do povećanja otpornosti na stres, pa poduzimanje ovih mjera ubrajamo u vještine suočavanja sa stresom: redovita i odgovarajuća prehrana, izbaciti ili smanjiti uzimanje kofeina, nikotina i šećera, baviti se tjelesnim vježbanjem radi održavanja tjelesne kondicije, osigurati redovit raspored odmora i dovoljno vremena za spavanje, promijeniti raspored obveza na poslu ili kod kuće, prekinuti s nekim aktivnostima koje nisu nužne, a koje su postale opterećenje (33).

Kako bismo spriječili ili ublažili stres, ponekad možemo promijeniti samu stresnu situaciju, a ponekad svoj odnos ili pogled na situaciju: zadržati osjećaj za humor u situacijama koje mogu izazvati stres, održavati ravnotežu između rada i zabave, usporiti, pronaći vrijeme za opuštanje, podijeliti probleme s prijateljima i obitelji, izvorima socijalne podrške, poznavati sebe i svoje granice tolerancije na stres, zatražiti savjete od stručne osobe (33).

Čini se normalnim očekivati izvjesnu izloženost stresu na radnom mjestu, jer stres je zapravo prirodna reakcija ukupnog čovjekovog sustava na okolnosti koje na njega postavljaju povećane zahtjeve i napore. Istovremeno prekomjerni stres može negativno utjecati na produktivnost te tjelesno i emocionalno zdravlje zaposlenika. Iako se ne mogu kontrolirati svi procesi u radnom okruženju i oko njega, to ne znači da smo nemoćni u prevenciji stresa i mogućih štetnih posljedica, čak i kada se pojave ozbiljnije poteškoće vezane uz posao (34). Doživljaj stresa, njegova snaga, važnost i moguće opasnosti kod svakog od nas rezultat su specifičnih doprinosa osobnog iskustva, usvojenih načina reagiranja na stres, korištenih mehanizama suočavanja sa stre-

which a person tries to overcome or alleviate pressures caused by a threatening situation (34). A healthy lifestyle, that is, measures to improve health, they also lead to an increase resistance to stress, so taking these measures is one of our coping skills: regular and proper diet, throw out or reduce your intake of caffeine, nicotine and sugar, engage in physical exercise for maintenance physical fitness, ensure a regular schedule rest and enough time to sleep, change the schedule of appointments at work or at home, interrupt with some activities that are not necessary, which have become a burden (33). To prevent or relieve stress, sometimes we can change the stressful situation itself, and sometimes your relationship or view of the situation: maintain a sense of humor in situations that can cause stress, maintain a balance between work and fun, slow down, find time for relax, share problems with friends and families, sources of social support, know yourself and your limits of stress tolerance take advice from an expert (33).

It seems normal to expect some exposure to stress in the working environment since stress is actually a natural reaction of a person to circumstances that present an increase in demands and efforts. At the same time excessive stress can negatively affect productivity and the physical and emotional health of employees. Although we can not control all processes in and around the work environment, it does not mean that we are powerless in prevention of stress and possible adverse effects, even when more serious work-related difficulties arise (34). The experience of stress, its strength, importance and possible dangers in each are the result of specific contributions from the personal experience, adopted ways of responding to stress, the mechanisms of coping with stress, our abilities, our social environment and social support which in situations of stress we get, and the overall state of physical resources. In the broadest sense, stress can be

som, našim sposobnostima, socijalnim okruženjem i socijalnom podrškom koju u situacijama stresa dobivamo, te ukupnim stanjem tjelesnih resursa. U najširem smislu, stres se može odrediti kao tjelesna i psihološka reakcija na vanjske i unutarnje stresore (35). Stanje stresa je svako stanje u kojem se na bilo koji način (fizički, psihički ili socijalno) osjećamo ugroženi ili procjenjujemo da su ugroženi naši bližnji (35). Za pojedinca naizgled teška situacija ne mora izazvati stres ako pojedinac prosuđuje da ima načina i sposobnosti da joj se odupre (35). Kada postoji nerazmjer između zahtjeva koji se na nekog postavljaju i njegovih mogućnosti odupiranja, kao i kada pojedinac procijeni da nema dovoljno socijalne podrške koja bi mu pomogla u suočavanju sa stresom, tada se može govoriti o stresnoj situaciji (35). Iznimno je veliki broj okolnosti koje mogu biti povezane sa stresom, a kada se tome dodaju osobitosti pojedinaca, raznolikost stresora postaje još veća, pa postaje jasna potreba za pokušajem sistematiziranja izvora stresa (36). Ljudi pokazuju velike međusobne razlike u reakcijama na stres, no možemo se pitati postoje li neke zakonitosti koje vrijede za većinu ljudi. Niz pravilnosti danas je poznat, pa tako možemo reći da su duljina i snaga djelovanja stresa te povezanost s drugim stresovima bitni za njegove ishode (36). Reakcija na stres osim psiholoških reakcija na stres uključuje i kognitivne reakcije koje nam pomažu da putem pojačane pozornosti, bolje koncentracije, kvalitetnijeg prosuđivanja, bržeg odlučivanja i sl., brže i bolje reagiramo na stresnu situaciju. Međutim, ovisno o intenzitetu stresa i našoj prosudbi hoćemo li se moći oduprijeti, te reakcije mogu i otežati suočavanje sa stresnom situacijom u obliku poremećaja koncentracije, rasuđivanja i logičkog mišljenja (35,36). Osobe kojima je osnovni dio svakodnevnog posla pružanje usluga skrbi drugim ljudima, kao što to čine zdravstveni djelatnici, svakodnevno su izložene djelovanju brojnih stresora na poslu. Što su

determined as a physical and psychological reaction to external and internal stressors (35). A state of stress is any condition in which in any way (physical, who, mentally or socially) feel threatened or we estimate that our loved ones are endangered (35). For an individual, a seemingly difficult situation does not have to cause stress if the individual judges that they have ways and ability to resist it (35). When there is a disproportion between the requirements being made on them also ask one's ability to resist it, as well as when one estimates that one is gone enough social support to help him dealing with stress, one can then speak on the stressful situation (35). It is an extremely large number circumstances that may be related to stress, and when added to the particularities of individuals, the diversity of stressors becomes even greater, so there is a clear need to try to systematize sources of stress (36). People show great differences in responses to stress, but we can wonder if there are any laws that apply for most people. The sequence of regularities is known today, so we can say that the length and strength of the effects of stress and the connection with other stresses relevant to its outcomes (36). Stress response in addition to psychological responses to stress, it also includes cognitive reactions that help us through increased attention, better concentration, better judgment, faster decision making and etc., we respond faster and better to a stressful situation. However, depending on the intensity of the stress and ours judging whether we can resist these reactions can also make it difficult to deal with stress the situation in the form of a concentration disorder, reasoning and logical thinking (35,36). People who are an essential part of their daily work providing care to other people, such as this is what health professionals do, they are everyday exposed to the many stressors at work. The more complex the care services they provide, and the possibility of failure and the severity of the consequences greater - the greater is the exposure to stress

usluge skrbi koje pružaju složenije, a mogućnost neuspjeha i težina posljedica veća - to je veća i izloženost stresu na poslu (36). Reaktivne pristupe sprječavanju okolnosti iz kojih proizlazi stres možemo pokušati odrediti kao one u kojima se nastoji otkriti i promijeniti one osobine radnog mjesta ili radnika koje su vjerojatno izazvale stres (36). Proaktivni postupci sprječavanja okolnosti iz kojih proizlazi stres usmjereni su na samo radno mjesto, a ne na zaposlenika i njima se pokušava stvoriti radno okruženje bez stresa koliko je više moguće. Kada govorimo o primarnim pristupima prevencije u praksi, treba primijetiti da su ovi pristupi češće usmjereni na zaposlenika (pojedince) nego na radno mjesto (36). Često se smatra da su proaktivni pristupi preskupi ili ometajući za učinkoviti radni proces. Također se često čini kako ih je teže provesti nego strategije koje su usmjerene na pojedinca (36). U sekundarne strategije za upravljanje stresom ubraja se i razvoj vještina suočavanja.

Postoje tri osnovna oblika prevencije, suzbijanja i ublažavanja stresa i izgaranja na poslu, a zbog svoje prirode ti oblici prevencije mogu se nazvati samozaštita, suzaštita i stručna pomoć (35). Ako ne možemo promijeniti našu okolinu, možemo promijeniti naš pogled prema van i način na koji percipiramo našu okolinu. Kako je naša percepcija bitno određena našim stajalištem, istu situaciju u kojoj se nalazimo možemo različito doživjeti. Kad bismo imali drugačiji odnos prema pojedinim situacijama, one ne bi morale rezultirati stresom (37).

Osim farmakološke terapije kod oboljelih od neurokognitivnih poremećaja primjenjuju se i različite nefarmakološke metode i postupci usmjereni na bihevioralne i psihosocijalne, ali i kognitivne simptome. Iako postoje brojna istraživanja iz područja nefarmakoloških aspekata terapije demencija, zbog postojanja metodoloških nedostataka i razlika između studija, njihovi rezultati iziskuju dalje potvrde učinkovitosti pojedinačnih tehnika i metoda.

at work (36). Reactive approaches to preventing circumstances from which stresses we can try to determine as those in which it seeks to discover and change itself those characteristics of the workplace or workers that they are probably caused stress (36). Proactive procedures to prevent stressful circumstances are focused on the workplace itself, a not on the employee and trying to create them a stress-free work environment as much as possible. When it comes to primary approaches prevention in practice, it should be noted that these approaches more often focused on the employee (individual) than on the workplace (36). It often does considers proactive approaches too expensive or interfering with an efficient workflow. Also they often seem to be more difficult to implement than individual-centered strategies (36). In secondary strategies for stress management development of coping skills is also included. There are three basic forms of preventing, controlling and alleviating stress and burnout at work, and because of their nature, these forms of prevention can be call self-protection, co-protection and professional help (35). If we cannot change our environment, we can change our view towards outside and the way we perceive our environment.

How our perception is essentially determined by ours from the standpoint, the same situation we are in we may experience differently. If we had different attitude to individual situations, they should not result in stress (37). In addition to pharmacological therapy in patients with neurocognitive disorders apply and various non-pharmacological methods and procedures focused on behavioral and psychosocial, but also cognitive symptoms. Although there are numerous studies in the field of non-pharmacological aspects of dementia therapy, for its existence methodological shortcomings and differences between study, their results warrant further confirmation the effectiveness of individual techniques and

Primjenjuju se sljedeće tehnike: edukacija njegovatelja, adaptacija okruženja, muzikoterapija, aromaterapija, terapija svjetlom, terapija uz pomoć kućnih ljubimaca, strukturirane aktivnosti, fizička aktivnost, kognitivna rehabilitacija, bihevioralna terapija, terapija validacije i dr. Primjena nefarmakološke terapije pokazala je poboljšanje simptoma u smislu ublažavanja nekih bihevioralnih poremećaja (agitacija, agresija), redukcije depresivnosti, usporavanja progresije kognitivnih disfunkcija, očuvanje samostalnosti u izvođenju pojedinih zadataka vezanih za svakodnevni život, i poboljšanja kvalitete života (10).

Nefarmakološke mjere kod oboljelih od demencija su ponajprije usmjerene na nekognitivne simptome (10). U ove simptome spadaju: agitacija, agresija, psihoza, seksualna dezinhibicija, problemi prehrane. Ovi simptomi su čest razlog za institucionalizaciju oboljelih i veliki su problem za njegovatelje (10).

Najčešći oblik akutnog moždanog sindroma je delirij. To je akutna, najčešće reverzibilna, nespecifična psihoza, koju obilježavaju dezorijentiranost, konfuznost i dezorganizirano ponašanje (38). Diljem svijeta procjenjuje se da je učestalost delirija 0,4 % u općoj populaciji uz povećanje do 1 % u populaciji dobi iznad 55 godina (39). U bolnicama je delirij češći i pojavljuje se u 22 % pacijenata koji se liječe na bolničkim odjelima, 11 – 35 % na kirurškim, i do 80 % bolesnika u jedinicama intenzivne skrbi (40). Delirij može promijeniti tijek podležućoj demenciji uz dramatično pogoršanje na putanju kognitivnog propadanja. Studije praćenja su pokazale da se osobe s demencijom s preboljenim delirijem rijetko vraćaju na prijašnju razinu funkcioniranja, imaju veću stopu kognitivnih oštećenja, institucionalizacije i smrti (9). Unatoč visokoj stopi učestalosti simptomi delirija nisu uvijek prepoznati (41). Budući da se pokazalo kako se delirij može u velikoj mjeri prevenirati, na delirij više ne gledamo kao na neizbježnu komplikaciju bolesti te je njego-

methods. The following techniques are used: educating caregivers, adaptation of the environment, music therapy, aromatherapy, light therapy, therapy with pet assistance, structured activities, physical activity, cognitive rehabilitation, behavioral therapy, validation therapy and other. The use of non-pharmacological therapy showed is an improvement in symptoms in terms of alleviating some behavioral disorders (agitation, aggression), depression reduction, slowing down progression of cognitive dysfunction, preservation independence in performing individual tasks related to daily life, and improvements quality of life (10). Non-pharmacological measures in patients with dementia are primarily focused on non-cognitive symptoms (10). These symptoms include: agitation, aggression, psychosis, sexual disinhibition, nutrition problems. These symptoms are a common reason for the institutionalization of the sick and are a major problem for caregivers (10). The most common form of acute brain syndrome is delirium. It is acute, most often reversible, nonspecific psychosis, characterized by disorientation, confusion and disorganized behavior (38). Worldwide, it is estimated that the incidence of delirium is 0.4% in the general population with an increase of up to 1% in the population above 55 (39). In hospitals, delirium is more common and occurs in 22% of patients treated in hospital wards, 11 - 35% in surgical, and up to 80% of patients in intensive care units (40). Delirium can change the course of the underlying dementia with dramatic worsening in the trajectory of cognitive decline. Monitoring studies have shown that people with dementia with delirium rarely return to their previous one level of functioning, have a higher rate of cognitive impairment, institutionalization, and death (9). Despite the high incidence of symptoms delirium is not always recognized (41). Because it has been shown how delirium can be extensively prevented, we no longer regard delirium as the inevitable complication of

va incidencija postala koristan parametar za procjenu i praćenje kvalitete medicinske skrbi (42). Stoga u bolesnika koji su visoko vulnerable za delirij, kao što su osobe s demencijom i koegzistirajućim zdravstvenim stanjima može doći do razvoja delirija i kod relativno benignih razloga kao što je promjena jedne doze lijeka za spavanje. Suprotno tome, kod pacijenata koji nisu osjetljivi za nastanak delirija, on će se eventualno razviti tek nakon izlaganja multiplim štetnim događajima kao što je opća anestezija, velika operacija i psihoaktivne supstancije. Rizikni čimbenici za razvoj delirija su i oštećenja mozga prije pojave delirantne epizode. To se odnosi na cerebrovaskularnu bolest i njezine posljedice (cerebrovaskularni infarkt), demenciju, tumore i kranio-cerebralnu traumu (43).

Potreban je oprez, jer atipični antipsihotici kao i parenteralni haloperidol nose rizik od moždanog udara i produljenja QT intervala. Daljnji neželjeni učinci su somnolencija, ekstrapiramidni učinci (tremor, rigidnost mišićne mase, nemir, poteškoće s gutanjem), snižen prag za epileptičke napadaje, neuroleptički maligni sindrom, kardiovaskularni učinci (aritmije, iznenadna smrt, hipotenzija, tahikardija), pneumonija, urinarna retencija, posturalna nestabilnost, padovi, duboka venska tromboza i metabolički sindrom (povećanje tjelesne težine, inzulinska rezistencija i hipertrigliceridemija). Čak je i kratkotrajno liječenje povezano s povećanom smrtnosti. Potrebno je izbjegavati haloperidol kod Parkinsonove demencije i demencije s Lewyjevim tjelešcima. Alternativa kod tih pacijenata je lorazepam. Nekoliko prikaza slučajeva pokazali su obećavajuće rezultate s inhibitorima kolinesteraze primjerice donepezilom, ali je potrebno provesti još kontroliranih kliničkih ispitivanja prije nego se mogu dati pouzdane preporuke. Benzodiazepini nisu preporučljivi kao prva linija u liječenju delirija, jer mogu pogoršati psihički status i izazvati prekomjernu sedaciju (44).

the disease is his incidence has become a useful parameter for assessing and monitoring the quality of medical care (42). Therefore, in patients who are highly vulnerable to delirium, such as people with dementia and coexisting medical conditions, can occur development of delirium even for relatively benign causes such as changing a single dose of a sleeping medicine. In contrast, in patients who are not sensitive to the onset of delirium, it will eventually develop only after exposure to multiple adverse events such as general anesthesia, major surgery, and psychoactive substances risk. Factors for the development of delirium are brain damage before the onset of the delirious episode. It refers to cerebrovascular disease and its consequences (cerebrovascular stroke), dementia, tumors and craniocerebral trauma (43). Caution is needed because atypical antipsychotics like and parenteral haloperidol carry the risk of given stroke and QT interval prolongation. Further side effects are somnolence, extrapyramidal effects (tremor, muscular rigidity, restlessness, difficulty swallowing), reduced threshold for seizures, neuroleptic malignant syndromes, cardiovascular effects (arrhythmias, sudden death, hypotension, tachycardia), pneumonia, urinary retention, postural instability, falls, deep vein thrombosis and metabolic syndrome (weight gain, insulin resistance and hypertriglyceridemia). Even short-term treatment is associated with increased mortality. Haloperidol in Parkinson's and Lewy body dementia should be avoided. An alternative to code of these patients is lorazepam. Some views cases showed promising results with cholinesterase inhibitors, for example donepezil, but more controlled clinical trials need to be conducted before they can be make reliable recommendations. Benzodiazepines are not recommended as a first line in the treatment of delirium, as they can worsen psychic status and cause excessive sedation (44). Patient associations are a significant subject in the process are educations of caregivers and families of the

Udruge bolesnika su značajan subjekt u procesu edukacije njegovatelja i obitelji oboljelih, pa ih je nužno dotirati i podupirati. Grupe samopomoći formirane unutar udruga od velike su koristi u ohrabrivanju njegovatelja i prevenciji sagorijevanja (tj. *burn-out* sindroma) (45). U kasnijim, odnosno terminalnim fazama AB, kada obitelj najčešće više nije u stanju adekvatno skrbiti za bolesnika, nužno je oboljelog smjestiti u specijaliziranu ustanovu (45).

Prema algoritmu Svjetske zdravstvene organizacije iz 2019. godine glavni cilj preventivnih aktivnosti potrebno je usmjeriti na održavanje i poboljšanje fizičke aktivnosti, aktivnosti vezane uz pušenje i konzumaciju alkoholnih pića i promicanju prestanka pušenja kao i konzumacije alkoholnih pića, intervencija s ciljem poboljšanja kvalitete prehrane, poboljšanje socijalne podrške te kognitivnih treninga, kontroli tjelesne težine, tlaka, dijabetesa, vrijednosti lipida, ali i liječenju depresije, problema sa sluhom (46).

ZAKLJUČAK

Sve je više dokaza koji upućuju na to da je baš zdrav način života, znači mediteranska prehrana, umjerena fizička aktivnost (npr. hodanje), socijalna interakcija i vježbanje mozga, uz nepušenje, izbjegavanje ozljeda, visokog šećera i kolesterola, presudno važna za smanjenje rizika od nastanka demencije, odnosno AB-a. U smanjenju razvoja demencije kada je riječ o osobama treće dobi od ključnog je značenja nastavak njihove mentalne aktivnosti (tzv. mentalni fitness). Vrlo je korisno kada se (stariji) ljudi redovito bave nekim društvenim igrama, različitim mozgalicama, križaljka, sudokom, rebusima i slično, jer sve to služi i kao svojevrsan kognitivni trening.

sick, well it is necessary to touch and support them. Self-help groups formed within associations are large used in caregiver encouragement and prevention combustion (ie, burn-out syndromes) (45). In the later or terminal stages of AB, when most often the family is no longer adequate to care for the patient, it is necessary to place the patient in a specialized institution (45).

According to the World Health Organization Algorithm of 2019, the main goal of preventative activities should be focused on maintaining and improving physical activity, activities related to smoking and alcohol consumption drinks and promoting smoking cessation as well as consumption of alcoholic beverages, interventions with a purpose improving diet quality, improving social support and cognitive training, weight control, pressure, diabetes, lipid values, but also treatment for depression, problems with hearing (46).

CONCLUSION

In conclusion, we can say that there is a growing number of evidence suggesting that a healthy lifestyle, which means a Mediterranean diet, moderate physical activity (walking), social interaction, and mental exercise, along with avoidance of smoking, injuries, high values of glucose, and cholesterol, is of crucial importance for the reduction of risks for dementia and AD. In reducing the development of dementia when it comes to it is crucial for older people to continue their mental activity (so called mental fitness). Very useful when (older) people regularly engage in some board games, different puzzles, crossword puzzles, sudoku, rebuses and the like, because it all serves as a kind of cognitive training.

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