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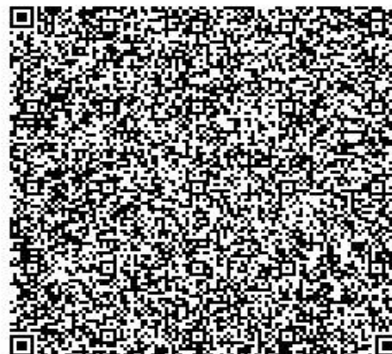
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Predgovor

Poštovani čitaoci,

Pred vama se nalazi Zbornik sažetaka sa naučne konferencije „Znanjem do zdravlja – SANUS 2024“. Zbornik sadrži radove saopštene na 3. međunarodnoj naučnoj konferenciji iz područja zdravstvenih i srodnih nauka u organizaciji JU Visoke medicinske škole Prijedor, u suorganizaciji Akademije stukovnih studija Beograd, Rudarskog fakulteta Prijedor Univerziteta u Banjoj Luci, Šumarskog fakulteta Univerziteta u Banjoj Luci, od 19. do 21. septembra 2024. godine. Zbornik sažetaka prethodi izdavanju Zbornika radova koji će se štampati nakon održavanja konferencije.

Pri uređivanju ovog zbornika, uređivački odbor je razvrstao radove prema oblastima koje obuhvataju 3 tematske sesije: (1) Laboratorijska medicina, dijagnostika, zdravstvena njega; (2) Rehabilitacija, fizičko i mentalno zdravlje i (3) Spoljašnji faktori i prevencija rizika po zdravlje ljudi. U Zborniku su predstavljeni sažeci četiri plenarna predavanja, šest sekcijских predavanja i pedeset sažetaka usmenih i posterskih prezentacija. Sažeci su razvrstani u prethodno navedene tri sesije.

Učešće na Konferenciji uzelo je 117 autora iz 8 država, sa ukupno 56 radova. S obzirom na oblasti koje pokriva, Konferencija je tematski veoma raznolika i bogata sadržajima kao što su teme vezane za: prevenciju bolesti i promociju zdravlja, aktuelnosti u sestrinskoj praksi, modernu medicinsko-laboratorijsku i mikrobiološku dijagnostiku, bezbjednost hrane, uticaj ekoloških faktora na zdravlje i zdravlje životne sredine, fizioterapiju i inovativne metode koje se koriste u fizioterapiji, savremeni pristupi u radnoj terapiji, uticaj fizičkog vježbanja na ljudsko zdravlje i drugo.

Najsrdanije se zahvaljujemo autorima radova, predavačima po pozivu i moderatorima. Organizator ovog naučnog skupa posebnu zahvalnost dužuje suorganizatorima, sponzorima, članovima Naučnog i Organizacionog odbora, te svim drugima, koji su dali veliki doprinos realizaciji Konferencije SANUS 2024 i štampanju ovog Zbornika.

Uredništvo

Preface

Dear readers,

Before you is the Book of Abstracts from the Scientific Conference "Knowledge to Health - SANUS 2024". The book contains abstracts presented at the Third International Scientific Conference in the field of health and related sciences, organized by the College of Health Sciences Prijedor, with the coorganization of Academy of Applied Studies Belgrade, Faculty of Mining Prijedor, University of Banja Luka, Faculty of Forestry, University of Banja Luka from September 19 to 21, 2024. The Book of Abstracts precedes the publication of the Proceedings, which will be printed after the Conference.

When editing this book, the editorial board classified the papers according to areas that include 3 thematic sessions: (1) Laboratory Medicine, Diagnostics, Health Care; (2) Rehabilitation, Physical and Mental Health and (3) External Factors and Prevention of Risks to Human Health. Abstracts of four plenary lectures, six session lectures and fifty abstracts of oral and poster presentations are presented in the Proceedings. The abstracts are classified into the three sessions mentioned above.

The number of 117 authors from 8 countries will participate in the Conference, with a total of 56 papers. Considering the sections it covers, the Conference is thematically very diverse and rich in content such as topics related to: disease prevention and health promotion, actualities in nursing practice, modern medical-laboratory and microbiological diagnostics, food safety, the impact of environmental factors on health and the health of the environment, physiotherapy and innovative methods used in physiotherapy, modern approaches in occupational therapy, the impact of physical exercise on a whole range of aspects of human health and more.

We would like to thank the authors of the papers, invited lecturers and moderators. The organizer of this scientific meeting owes special thanks to the co-organizers, sponsors, members of the Scientific and Organizing Committee, and all others, who made a great contribution to the realization of the SANUS 2024 Conference and the printing of this Book of Abstracts.

Editorship

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PLENARNA PREDAVANJA

PLENARY LECTURES

VEŠTAČKA INTELIGENCIJA U MIKROBIOLOGIJI

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Sažetak. Veštačka inteligencija (*engl.* Artificial Intelligence, AI) sve više se primenjuje u medicini, pa tako i u medicinskoj mikrobiologiji. Primena AI je dovela do revolucionarnih promena na različite načine i u različitim oblastima mikrobiologije. Neke od ključnih primena AI u mikrobiologiji je prepoznavanje i klasifikacija mikroorganizama, pomoću analize mikroskopske slike i analize genoma. Sledeća značajna primena AI u mikrobiologiji jeste otkrivanje i razvoj antimikrobnih lekova (otkrivanje ciljnih molekula na i u mikroorganizmima i osmišljavanje lekova), kao i predviđanje razvoja antimikrobne otpornosti. Korišćenje AI će biti presudno u epidemiološkom nadzoru zaraznih bolesti, pomažući u predviđanju izbijanja epidemija i za praćenje kontakata. Takođe, AI će se koristiti za osiguranje bezbednosti hrane i kontrolu kvaliteta hrane (prepoznavanje patogena koji se prenose hranom). Neprocenjiv doprinos AI već uveliko daje u naučnim mikrobiološkim istraživanjima (analiza velikih i složenih skupova podataka, prepoznavanje obrazaca i uspešnije vizualizacije i prikazi nalaza i rezultata). Na polju obrazovanja AI omogućava osmišljavanje virtuelnih laboratorija i simulacije koje mogu da pruže interaktivna i zanimljiva iskustva učenja za one koji studiraju mikrobiologiju. Zaključno, AI ima sposobnost da promeni mikrobiologiju, pre svega, automatizacijom i ubrzanjem procesa, robotizacijom, poboljšanjem tačnosti i pružanjem novih uvida u ponašanje i međusobne odnose mikroorganizama, što će dovesti do bolje i neuporedivo brže dijagnostike, uspešnijih tretmana i poboljšanih rezultata koji se tiču javnog zdravlja.

Ključne reči: mikrobiologija, dijagnostika, veštačka inteligencija, robotizacija

ARTIFICIAL INTELLIGENCE IN MICROBIOLOGY

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Abstract. Artificial Intelligence (AI) is increasingly being used in medicine, including in medical microbiology. The application of AI has led to revolutionary changes in different ways and in different areas of microbiology. Some of the key applications of AI in microbiology are the recognition and classification of microorganisms, using microscopic image analysis and genome analysis. The next significant application of AI in microbiology is the discovery and development of antimicrobial drugs (discovery of target molecules on and in microorganisms and drug design), as well as predicting the development of antimicrobial resistance. The use of AI will be crucial in the epidemiological surveillance of infectious diseases, helping to predict outbreaks and contact tracing. Also, AI will be used to ensure food safety and food quality control (identification of foodborne pathogens). AI is already making an invaluable contribution to scientific microbiological research (analysis of large and complex data sets, pattern recognition and more successful visualization and presentation of findings and results). In the field of education, AI enables the design of virtual laboratories and simulations that can provide interactive and engaging learning experiences for those studying microbiology. In conclusion, AI has the ability to change microbiology, primarily by automating and speeding up processes, robotization, improving accuracy and providing new insights into the behavior and interrelationships of microorganisms, which will lead to better and incomparably faster diagnostics, more successful treatments and improved outcomes concerning public health.

Key words: microbiology, diagnostics, artificial intelligence, robotization

TRANSLACIONA ISTRAŽIVANJA U BIOMEDICINI

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Sažetak. Translaciona istraživanja u biomedicini predstavljaju savremene pokušaje uspostavljanja mosta između nagomilanih fundamentalnih biomedicinskih znanja i ograničene mogućnosti njihove praktične primjene u kliničkoj medicini i javnom zdravlju. Ova istraživanja igraju ključnu ulogu u ubrzavanju razvoja novih praktičnih alata kako bi se omogućilo brže prebacivanje rezultata naučnih otkrića u korist pacijenata, uz poboljšanje kvaliteta života i produženje životnog vijeka. Ubrzanje procesa uobičajeno veoma sporog razvoja novih praktičnih alata od početne ideje može da se postigne razbijanjem barijera i uspostavljanjem saradnje između različitih naučnih disciplina, ali i zainteresovanih strana kao što su akademska zajednica, farmaceutske kompanije i regulatorne agencije. Translaciona istraživanja suočavaju se s brojnim izazovima jer su često skupa i dugotrajna. Novi dijagnostički testovi i terapije moraju proći stroge regulatorne procedure i etičke zahtjeve do široke dostupnosti i pristupačnosti.

Ključne riječi: translaciona istraživanja biomedicine, etički aspekti, naučna istraživanja, praktična primjena

TRANSLATION RESEARCH IN BIOMEDICINE

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Abstract. Translational research in biomedicine represents contemporary attempts to establish a bridge between the accumulated fundamental biomedical knowledge and the limited possibility of their practical application in clinical medicine and public health. This research plays a key role in accelerating the development of new practical tools to enable faster translation of the results of scientific discoveries for the benefit of patients, while improving quality of life and extending life expectancy. Accelerating the process of the usually very slow development of new practical tools from the initial idea can be achieved by breaking down barriers and establishing cooperation between different scientific disciplines, but also interested parties such as the academic community, pharmaceutical companies and regulatory agencies. Translational research faces many challenges because it is often expensive and time-consuming. New diagnostic tests and therapies must undergo strict regulatory procedures and ethical requirements before they are widely available and affordable.

Key words: translational biomedical research, ethical aspects, scientific research, practical application

GLOBALNI CILJEVI ODRŽIVOG RAZVOJA (GSDGs):

**Šta je ostvareno u pogledu eliminisanja siromaštva i gladi,
povećanja raspoloživosti i bezbednosti hrane i vode?**

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Sažetak. U radu se razmatraju ostvarenja ključnih Globalnih ciljeva održivog razvoja (UN - GSDGs), pre svega u pogledu eliminisanja siromaštva, gladi i pothranjenosti u svetu, te neophodnosti da se čovečanstvu obezbedi puna i ravnopravna raspoloživost bezbedne hrane i vode. Ostvarenja GSDGs se posmatraju kao osnova globalnog unapređenja zdravlja i kvaliteta života čovečanstva, ali i brojnih budućih aktivnosti na razvoju i doslednoj primeni specifičnih menadžment standarda, kao uslov za njihovu doslednu primenu, efikasno i efektivno ostvarenje željenih rezultata, odnosno kao uslov za uspešnije poslovanje i konkurentnost.

Ključne reči: GSDGs, siromaštvo, glad, raspoloživost, bezbednost, hrana/voda, zdravlje

**GLOBAL SUSTAINABLE DEVELOPMENT GOALS (GSDGs):
What has been achieved in terms of eliminating poverty and hunger,
increasing the availability and safety of food and water?**

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Abstract. The paper discusses the achievement of the key Global Sustainable Development Goals (UN GSDGs), primarily in terms of eliminating poverty, hunger and malnutrition in the world, as well as the necessity to provide humanity with full and equal availability of safe food and water. Achievements of the GSDGs are viewed as the basis of the global improvement of the health and quality of life of mankind, but also of numerous future activities on the development and consistent application of specific management standards, as a condition for their consistent application, efficient and effective achievement of the desired results, i.e. as a condition for more successful business and more favorable competitiveness.

Key words: GSDGs, poverty, hunger, availability, safety, food/water, health

DIJABETES I KORONARNA BOLEST

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Sažetak. Dijabetes je dobro poznat faktor rizika za ishemijsku bolest srca i koronarna bolest (CAD) je odgovorna za 40-80% smrtnih ishoda kod pacijenata sa tipom 2 dijabetesa (T2D). Sveobuhvatno liječenje pacijenata sa dijabetesom i utvrđenom koronarnom bolešću (CAD) bi trebalo započeti zdravim stilom života i smanjenjem ili eliminacijom faktora rizika na koje je moguće uticati kao što su gojaznost, hipertenzija ili dislipidemija. Cilj farmakoterapije bi trebao biti značajno smanjenje ozbiljnih kardiovaskularnih (KV) incidenata. Prema rezultatima različitih studija KV ishoda (CVOT) preporučuje se primjena SGLT2 inhibitora i/ili agonista GLP-1 receptora kod ovih pacijenata u cilju redukcije KV događaja. Zbog raširenosti CAD neki pacijenti sa dijabetesom nisu pogodni kandidati za revaskularizaciju. Smanjenje tegoba se može postići povećanjem oksigenacije miokarda uz pomoć dugodjelujućih nitrata ili blokatora kalcijumskih kanala ili smanjenjem potrebe za kiseonikom uz pomoć beta blokatora, ranolazina ili ivabradina. Kod pacijenata sa dijabetesom i višesudovnom koronarnom bolešću, prednost se daje aortokoronarnoj prenosnici u odnosu na kompleksnu perkutanu koronarnu intervenciju (PCI). Kad god je to moguće, PCI uz korištenje stentova koji otpuštaju lijekove (DES) je prihvatljiv izbor kod pacijenata sa manje ekstenzivnom bolešću. U ranoj fazi ACS najbolje je pokušati ostvariti umjereno strogu glikemijsku kontrolu uz izbjegavanje hipoglikemija. Kontinuiranu infuziju insulina bi trebalo primjenjivati samo u slučajevima kada optimalnu glikemijsku kontrolu nije moguće postići na drugi način; nivo glukoze u krvi bi trebalo održavati na nivou <11,1 mmol/L (<200 mg/dL) ili <10,0 mmol/L (<180 mg/dL) prema nekim preporukama. Međutim, najbolja strategija liječenja ostaje nedefinisana. Ne-insulinske terapije, zbog niskog rizika od hipoglikemije istovremeno sa multifaktorskim CV zaštitnim efektom, u budućnosti se mogu pokazati kao najbolja opcija liječenja. Ipak, dokazi za blagotvorno dejstvo GLP 1RA DPP4 inhibitora i SGLT2 inhibitora uprkos sve većim brojem radova, nisu čvrsti i buduća randomizirana kontrolna ispitivanja mogu pružiti preciznije podatke.

Ključne riječi: dijabetes melitus, akutni koronarni sindrom, koronarna bolest

DIABETES AND CORONARY ARTERY DISEASES

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Abstract. Diabetes is a well-established risk factor for ischaemic heart disease and coronary artery disease (CAD) accounts for 40–80% of deaths in patients with diabetes type 2 (T2D). The comprehensive management of patients with diabetes and established CAD should start with a healthy lifestyle and reducing or eliminating modifiable risk factors such as obesity, hypertension, or dyslipidaemia. Based on the results of various CV study (CVOTs), SGLT2 inhibitors and/or GLP-1 RA are recommended in patients with T2D and CAD to reduce CV events. Due to the diffuse nature of CAD, some patients with diabetes are not amenable to revascularization. The symptom relief might then be achieved by increasing myocardial oxygen supply with long-acting nitrates or CCBs, or by decreasing oxygen demand with the assistance of beta-blockers, non-dihydropyridine CCBs, ranolazine, or ivabradine. In brief, given the current knowledge, in patients with diabetes and multivessel diseases, coronary artery bypass graft (CABG) with arterial grafts is preferred over complex percutaneous coronary interventions (PCI), providing that patient characteristics are considered. PCI with newer-generation drug-eluting stents (DES) whenever possible, is acceptable for patients with less extensive disease. Considering all evidences, it is the best to attempt moderately tight glycaemic control while avoiding hypoglycaemia in the early hours of ACS. Continuous insulin infusion should be limited to cases where the optimal glycaemic control cannot be achieved otherwise; blood glucose level should be maintained <11.1 mmol/L (<200 mg/dL) or <10.0 mmol/L (<180 mg/dL) according to some recommendations. However, the best treatment strategy remains undefined. Non-insulin therapies, due to the low risk of hypoglycemia constantly with the multifactorial CV protective effects, may be proved to be the best treatment option in the future. Nevertheless, evidences for the beneficial effects SGLT2 inhibitors and/or GLP-1 RAs and DPP4 inhibitors despite accumulating, is not robust and the future randomized control trials may provide more definitive data.

Key words: diabetes mellitus, acute coronary syndrome, coronary artery diseases

**PREDAVANJA PO POZIVU
(SEKCIJSKO PREDAVANJE)**

**LECTURES BY INVITATION
(SECTION LECTURE)**

PROCJENA KOGNITIVNOG STATUSA KOD STARIJIH OSOBA

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Sažetak. Starenje se karakteriše gubitkom sposobnosti u psihičkom i u fizičkom smislu. Detaljna procjena kognitivnog statusa može omogućiti ranu identifikaciju visokorizičnih bolesnika koji su kandidati za demenciju. Cilj ovog istraživanja bio je ispitati kognitivni status kod starih osoba preko 65 godina starosti koji borave u zajednici i potencijalne faktore rizika koji doprinose nastanku demencije. Istraživanje je dizajnirano po principu studije presjeka. U istraživanju su korišćeni opšti upitnik, subjektivna i objektivna procjena zdravlja ispitanika, Mini Kog procjena. Od statističkih testova korišćen je χ^2 kvadrat test. Kao nivo statističke značajnosti uzeta je uobičajena vrijednost $p < 0,05$. Bolji kognitivni status imale su osobe ženskog pola (80,2%) u odnosu na osobe muškog pola (84,6%) ($\chi^2 = 0,189$; $p = 0,664$). Ispitanici sa najnižim nivoom obrazovanja (osnovna škola) imali su lošiji kognitivni status (23,5%) naspram 13,3% ispitanika sa srednjim nivoom obrazovanja ($\chi^2 = 9,139$; $p = 0,010$). Uredan kognitivni nalaz imalo je 8,8% ispitanika koji se druže sa prijateljima u odnosu na 0% ispitanika sa urednim kognitivnim nalazom koji ne praktikuju druženje sa prijateljima ($\chi^2 = 18,243$; $p = 0,000$), takođe, kognitivni status bio je lošiji kod onih ispitanika koji su koristili različita pomagala (75%) naspram 17% onih koji ne koriste različita pomagala za svoju funkcionalnu pokretljivost ($\chi^2 = 8,832$; $p = 0,003$). Demencija u visokom procentu je prisutna među osobama starije životne dobi. Nivo obrazovanja i korištenje pomagala predstavljaju potencijalne faktore rizika za nastanak demencije.

Ključne riječi: starost, kognitivni status, gerijatrijska procjena

ASSESSMENT OF COGNITIVE STATUS IN ELDERLY PEOPLE

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Abstract. Aging is characterized by the loss of abilities in the psychological and physical sense. Detailed assessment of cognitive status may enable early identification of high-risk patients who are candidates for dementia. The aim of this research was to examine the cognitive status of elderly people over 65 years of age living in the community and potential risk factors that contribute to the onset of dementia. The research was designed according to the principle of a cross-sectional study. The research used a general questionnaire, subjective and objective assessment of respondents, Mini Kog assessment. The χ^2 square test was used for statistical tests. The usual value of $p < 0,05$ was taken as the level of statistical significance. Females (80.2%) had better cognitive status than males (84.6%) ($\chi^2 = 0.189$; $p = 0.664$). Respondents with the lowest level of education (primary school) had a worse cognitive status (23.5%) compared to 13.3% of respondents with an intermediate level of education ($\chi^2 = 9.139$; $p = 0.010$). Good cognitive status has 8.8% of respondents who socialize with friends had a good cognitive score compared to 0% of respondents with a good cognitive score who do not socialize with friends ($\chi^2 = 18.243$; $p = 0.000$), also, the cognitive status was worse in those respondents who used different aids (75%) versus 17% of those who do not use different aids for their functional mobility ($\chi^2 = 8.832$; $p = 0.003$). Dementia is present in a high percentage among elderly people. The level of education and the use of aids are potential risk factors for the onset of dementia.

Key words: aged, cognition, geriatric assessment

ANALIZA NAJVAŽNIJIH SEKUNDARNIH METABOLITA KORIJENA JAGORČEVINE

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Sažetak. Jagorčevina (*Primula veris* Huds.) je višegodišnja zeljasta biljka koja raste u zapadnoj i južnoj Evropi, sjeverozapadnoj Africi i dijelovima jugozapadne Azije. Ona spada u porodicu Primulaceae. Polovina svih vrsta iz ove porodice pripada rodu *Primula*. Jagorčevina je niska biljka koja raste u visinu do 20 cm i cvjeta tokom ranog proljeća. Ona ima važnu ulogu u fitoterapiji. U tradicionalnoj medicini korijen jagorčevine je korišten za razrjeđenje gustog bronhijalnog sekreta i olakšavanje iskašljavanja. Sekundarni metaboliti izolovani iz korijena jagorčevine imaju naglašen biološki i farmakološki potencijal. Za utvrđivanje terapijskog efekta potrebno je definisati sadržaj aktivnih jedinjenja i pratiti njihov sadržaj u ljekovitim proizvodima dobijenim iz korijena jagorčevine. Cilj ovog rada odnosi se na pregled trenutog stanja znanja o analitičkim metodama za detekciju i određivanje sadržaja sekundarnih metabolita dobijenih iz korijena jagorčevine. Ovaj pregled pruža detaljnu analizu trenutne primjene savremenih metoda u identifikaciji i određivanju sekundarnih metabolita korijena jagorčevine, a na osnovu podataka prikupljenih iz recenziranih radova refereisanih u bazama Science Direct, Scopus, Medline i Google Scholar. Pretraživanje je izvršeno na osnovu sljedećih ključnih riječi: „Primrose (*Primula veris*)”, „Flavonoids”, „Primrose (*Primula veris*) and Flavonoids”, „Phytomedicine”, „*Primula veris* and Phytomedicine”, „*Primula veris* and Flavonoids and Phytomedicine”. U analiziranim radovima kao jedinjenja sa najizraženijim fiziološkim djelovanjem navedeni su: triterpenski saponini i fenolna jedinjenja, uključujući flavonoide, fenolne kiseline i fenolne glikozide. Za identifikaciju i utvrđivanje sadržaja ovih jedinjenja u radovima su korištene različite analitičke metode: spektrofotometrijske metode (procjena kapaciteta antioksidativne aktivnosti pomoću DPPH, CUPRAC test, FRAP test), tankoslojna hromatografija, tečna hromatografija visokih preformansi (HPLC), detekcija evaporativnog raspršenja svjetlosti, masena spektrometrija (GC/MS), Fourier-transformska infracrvena spektroskopija (FTIR), nuklearna magnetna rezonancija (NMR). Najzastupljenija korištena metoda bila je HPLC. U ovom preglednom radu naglašena je važnost sekundarnih metabolita i drugih aktivnih komponenti iz korijena jagorčevine, te potreba za primjenom adekvatnih analitičkih metoda za brzu identifikaciju i tačno određivanje pojedinih sastojaka. Pored toga, prikazani su uslovi tokom određivanja sadržaja triterpenskih saponina i fenolnih jedinjenja. Rezultati prikazani u ovom radu služe kao važan izvor informacija za stručnjake u laboratorijama, farmaceutske i medicinske stručnjake.

Ključne riječi: primula, saponini, flavonoidi, tečna hromatografija visokih performansi

ANALYSIS OF THE MOST IMPORTANT SECONDARY METABOLITES OF PRIMROSE ROOTS

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Abstract. Primrose (*Primula veris* Huds.) is a perennial herbaceous plant which grows in Western and Southern Europe, Northwestern Africa, and most of Southwestern Asia. It belongs to the Primulaceae family. Half of all species from this family belong to the genus *Primula*. Primrose is a low plant that grows up to 20 cm in height and flowers during early spring. It has an important role in phytotherapy. In traditional medicine, primrose root is used to thin thick bronchial secretions and to facilitate expectoration. The secondary metabolites isolated from the roots of primrose have a pronounced biological and pharmacological potential. In order to determine the therapeutic effect, it is necessary to define the content of active compounds and monitor their content in the medicinal products obtained from the root of primrose. The aim of this paper is to review the current state of knowledge about analytical methods for the detection and determination of the content of secondary metabolites obtained from the roots of primrose. This review provides a detailed analysis of the current application of modern methods in the identification and determination of secondary metabolites of primrose root, based on data collected from peer-reviewed papers referenced in Science Direct, Scopus, Medline and Google Scholar databases. The search was performed based on the following keywords: " Primrose (*Primula veris*)", "Flavonoids", " Primrose (*Primula veris*) and Flavonoids", "Phytomedicine", "Primula veris and Phytomedicine", "Primula veris and Flavonoids and Phytomedicine". In the analyzed papers, the compounds with the most pronounced physiological effects were listed as: triterpene saponins and phenolic compounds, including flavonoids, phenolic acids and phenolic glycosides. Various analytical methods were used in the works to identify and determine the content of these compounds: spectrophotometric methods (estimation of antioxidant capacity using DPPH, CUPRAC test, FRAP test), thin-layer chromatography, high-performance liquid chromatography (HPLC), detection of evaporative light scattering, mass spectrometry (GC/MS), Fourier-transform infrared spectroscopy (FTIR), nuclear magnetic resonance (NMR). The most common method used was HPLC. In this review paper, the importance of secondary metabolites and other active components from the root of primrose is emphasized, as well as the need to apply adequate analytical methods for quick identification and accurate determination of individual ingredients. In addition, the conditions during the determination of the content of triterpene saponins and phenolic compounds are presented. The results presented in this paper serve as an important source of information for laboratory, pharmaceutical and medical professionals.

Key words: primula, saponins, flavonoids, high-performance liquid chromatography

IZOKINETIKA U KINEZITERAPIJI NAKON REKONSTRUKCIJE PREDNJEG UKRŠTENOG LIGAMENTA

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Sažetak. Jedna od najčešćih povreda u sportu i rekreaciji je povreda prednjeg ukrštenog ligamenta koljena, a kao posljedica ove povrede može u velikom broju slučajeva da se javi slabost mišića natkoljenice i trajno onesposobljenje koljena. Iako je ova tema obilato istraživana, još uvijek ne postoje ujednačeni standardi rehabilitacije ovih pacijenata. Cilj ovoga rada je da prikaže i objasni neke od koristi izokinetičkog treninga u rehabilitaciji oslabljenih mišića kod pacijenata nakon rekonstrukcije prednjeg ukrštenog ligamenta. Retrospektivnim istraživanjem praćeno je 180 pacijenata muškog pola, tri mjeseca nakon rekonstrukcije prednjeg ukrštenog ligamenta koljena. Pacijenti su podijeljeni u dvije ispitivane grupe prema vrsti rehabilitacionog protokola koji su provodili. U grupi A-izokinetičkoj ispitanici su u kineziterapiji provodili izokinetičko vježbanje. Ispitanici grupe B-izotoničke su provodili kineziterapiju baziranu na standardnim vježbama u okviru rehabilitacionog tretmana, ali sa izotoničkim vježbama. Protokoli su koncipirani tako da imaju progresiju po danima i sedmicama. Efekat rehabilitacije objektivizovan je izokinetičkim testom mišića fleksora koljena pri ugaonoj brzini od 60°/s prije tretmana, nakon tri sedmice i nakon šest sedmica tretmana. Ispitivani parametar je bio obrtni moment fleksora operisane noge – FLPTQR (Nm). Period praćenja je bio šest sedmica. Nađene su statistički značajne razlike ($p < 0,05$) u praćenom parametru u obje ispitivane grupe, ali u grupi A-izokinetičkoj je bio značajno veći nakon šest sedmica tretmana u odnosu na grupu B-izotoničku. Rezultat primjene izokinetičkog vježbanja je znatno bolji u odnosu na kineziterapijski rezultat vježbanja standardnim izotoničkim protokolom. Na osnovu navedenog izvodi se zaključak da je izokinetički protokol efikasniji metod u restauraciji obrtnog momenta zadnje lože natkoljenice kod pacijenata nakon rekonstrukcije prednjeg ukrštenog ligamenta u odnosu na standardni protokol.

Ključne riječi: izokinetika, prednji ukršteni ligament, fizioterapija, rehabilitacija.

ISOKINETICS IN KINESITHERAPY AFTER RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT

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Abstract. One of the most common injuries in sports and recreation is an injury to the anterior cruciate ligament, and as a result of this injury, weakness of the upper leg muscles and permanent disability of the knee may occur in a large number of cases. Although this topic has been extensively researched, there are still no uniform standards for the rehabilitation of these patients. The aim of this paper is to show and explain some of the benefits of isokinetic training in the rehabilitation of weakened muscles in patients after anterior cruciate ligament reconstruction. A retrospective study followed 180 male patients, three months after the reconstruction of the anterior cruciate ligament of the knee. The patients were divided into two examined groups according to the type of rehabilitation protocol they implemented. In group A-isokinetic subjects, they performed isokinetic exercise in kinesitherapy. Subjects of group B-isotonic performed kinesitherapy based on standard exercises as part of the rehabilitation treatment, but with isotonic exercises. The protocols are designed to have a progression by days and weeks. The effect of rehabilitation was objectveized by an isokinetic test of the knee flexor muscles at an angular velocity of 60°/s before treatment, after three weeks and after six weeks of treatment. The investigated parameter was the flexor torque of the operated leg - FLPTRQ (Nm). The follow-up period was six weeks. Statistically significant differences ($p < 0.05$) were found in the monitored parameter in both investigated groups, but in group A-isokinetic it was significantly higher after six weeks of treatment compared to group B-isotonic. The result of using isokinetic exercise is significantly better than the kinesitherapeutic result of exercise using a standard isotonic protocol. Based on the above, it is concluded that the isokinetic protocol is a more effective method in the restoration of the torque of the posterior thigh in patients after the reconstruction of the anterior cruciate ligament compared to the standard protocol.

Key words: isokinetics, anterior cruciate ligament, physiotherapy, rehabilitation.

ZNAČAJ OKUPACIJA ZA ŽIVOT OSOBE NAKON POVREDE KIČMENE MOŽDINE

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Sažetak. Istraživanja pokazuju da osobe sa povredama kičmene moždine mogu voditi zadovoljavajuće i ispunjene živote uprkos trajnom invaliditetu, uz dobru podršku okruženja i socijalnu inkluziju. Okupacije omogućavaju ljudima osnaživanje, zdravlje i blagostanje. Cilj ovog rada je pokazati značaj i vrijednost okupacija za osobu nakon povrede kičmene moždine. U studiji slučaja, gospodina Ivana nakon povrede kičmene moždine, provedeno je pet dubinskih intervjua. Dodatni podaci odabrani su metodom triangulacije. Analizom je proizašlo pet kategorija: okupacioni identitet prije povrede, okupacioni identitet nakon povrede, okupaciona kompetencija, okupaciona adaptacija i okruženje. Pozitivna lična uvjerenja i postavljanje ciljeva nakon traume bili su ključni za okupacionu adaptaciju. Nakon povrede, gospodin Ivan je pronašao okupaciju koje čini veliki dio njegovog svakodnevnog života. Najvažnija okupacija za njega je uređivanje web stranice Udruženja za povrede kičmene moždine, koja predstavlja njegov okupacioni identitet. To mu donosi vrijednost, značenje, samoaktualizaciju, pripadnost i socijalnu inkluziju. Obrasci izvođenja okupacija i njegove rutine održavaju njegovo zdravlje. Prilagođavanje okruženja i brojna pomagala, pozitivna uvjerenja i efikasno funkcionisanje doprinose postizanju okupacionih kompetencija. U drugim istraživanjima, okupacije su ljudima dale priliku da pokažu za šta su sposobni. Pokazalo se da su postizanje ciljeva i snažna intrinzična motivacija važni za životno zadovoljstvo. Studija slučaja gospodina Ivana inspirativna je potvrda važnosti okupacija za ispunjen život, bez obzira na visoku motoričku onesposobljenost.

Ključne riječi: okupacioni identitet, okupaciona adaptacija, podrška okruženja, zadovoljstvo

THE MEANING OF OCCUPATION FOR A PERSON'S LIFE AFTER SPINAL CORD INJURY

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Abstract. Studies show that people with spinal cord injuries can lead satisfying and fulfilling lives despite permanent disabilities, with good environmental support and they are social inclusion. Occupations brings people empowerment, health and well-being. The aim of this paper is to demonstrate the meaning and value of occupation for a person after spinal cord injury. In the case study, Mr. Ivan after spinal cord injury, five in-depth interviews were conducted. Additional data were selected using the triangulation method. Five topics emerged from the analysis: occupational identity before the injury, occupational identity after the injury, occupational competence, occupational adaptation and environment. Positive personal beliefs and goal-setting after trauma were key to occupational adaptation. After injury, Mr. Ivan found an occupation that forms a large part of his everyday life. The most important occupation for him is editing the website of the **Slovenian Paraplegic Association**, which represents his occupational identity. It brings him value, meaning, self-actualisation, belonging and social inclusion. Patterns performance of occupation and his routines maintain his health. Environmental adaptations and a number of aids, positive beliefs and effective functioning contribute to achieving occupational competence. In other research, occupation has also given people the opportunity to show what they are capable of. Achieving goals and strong intrinsic motivation have been shown to be important for a life satisfaction. The case study of Mr. Ivan is an inspiring confirmation of the meaning of occupation for a a fullfilled life, regardless of high motor disability.

Key words: occupation identity, occupational adaptation, support environment, satisfaction

INTRAHOSPITALNE INFEKCIJE I MJERE ZA SUZBIJANJE

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Sažetak. Intrahospitalne infekcije su infekcije koje su pacijenti stekli tokom boravka u bolnici ili drugoj zdravstvenoj ustanovi. Predstavljaju zdravstveni i ekonomski izazov na globalnom nivou jer dovode do povećanog mortaliteta, morbiditeta i vremena boravka u bolnici. Prema podacima Evropskog centra za prevenciju i kontrolu bolesti, godišnje se javlja više od 3,5 miliona slučajeva intrahospitalnih infekcija u Evropskoj uniji i Evropskom ekonomskom prostoru, od kojih je više od 90 000 sa letalnim ishodom. Prosječna učestalost je 5-10%, pri čemu je najveća u jedinicama intenzivne njege (9-37%). Uglavnom su to pneumonije povezane sa ventilatorom, infekcije krvotoka, infekcije povezane sa urinarnim kateterom i infekcije hirurškog mjesta. Uzročnici su bakterije, virusi, gljivice i paraziti. U cilju suzbijanja i kontrole, važno je utvrditi povezanost između bolničkog okruženja (vazduh, površine, radna odjeća zaposlenih) i različitih patogena, posebno meticilin rezistentnog *Staphylococcus aureus*, vankomicin rezistentnih enterokoka, norovirusa, *Pseudomonas aeruginosa*, *Clostridium difficile*, *Acinetobacter*, *Candida* spp. Intrahospitalne infekcije čine 71% slučajeva infekcija bakterijama otpornim na antibiotike, uključujući bakterije otporne na antibiotike posljednjeg izbora, kao što su *Enterobacterales* otporne na karbapenem. Osim čišćenja i dezinfekcije, značajna je i periodična promjena i provjera efikasnosti dezinfekcionih sredstava kako prema standardnim indikator sojevima (test mikroorganizmima) tako i kliničkim i ambijentalnim intrahospitalnim izolatima. Potrebno je što prije uraditi mikrobiološka ispitivanja biološkog materijala tj. uzoraka pacijenata (briseva, krvi, urina), kao i uzoraka vazduha, briseva radnih odijela zaposlenih, opreme i površina, da bi se izolovao i identifikovao uzročnik infekcije. U slučaju bakterijskih izolata, ispituje se i osjetljivost na antibiotike fenotipskim i/ili genotipskim metodama. Obavezan je epidemiološki nadzor radi identifikacije bolesnika koji imaju infekciju ili kolonizaciju, kao i sagledavanje faktora rizika koji su doprinijeli njenom nastanku. Procjena je da se primjenom protokola i preporuka za sprečavanje i suzbijanje može sprečiti 30%, pa čak i do 50% intrahospitalnih infekcija.

Ključne riječi: intrahospitalne infekcije, epidemiološki nadzor, identifikacija, dezinfekcija

HOSPITAL-ACQUIRED INFECTIONS AND MEASURES FOR SUPPRESSION

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Abstract. Hospital-acquired infections are infections that patients contract during their stay in a hospital or other healthcare facility. They represent a global health and economic challenge, as they lead to increased mortality, morbidity, and length of hospital stay. According to the European Center for Disease Prevention and Control, more than 3.5 million cases of hospital-acquired infections occur in the European Union and the European Economic Area each year, of which more than 90,000 are fatal. The average incidence is 5-10%, with the highest in intensive care units (9-37%). These are mainly ventilator-associated pneumonia, bloodstream infections, urinary catheter-associated infections, and surgical site infections. The pathogens are bacteria, viruses, fungi, and parasites. To suppress and control, it is important to identify the link between the hospital environment (air, surfaces, staff uniforms) and various pathogens, especially methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci, norovirus, *Pseudomonas aeruginosa*, *Clostridium difficile*, *Acinetobacter*, *Candida* spp. Hospital-acquired infections account for 71% of antibiotic-resistant bacterial infections, including bacteria resistant to last-generation antibiotics such as carbapenem-resistant *Enterobacterales*. In addition to cleaning and disinfection, it is also important to regularly change and check the effectiveness of disinfectants using both standard indicator strains (test microorganisms) and clinical and ambient hospital-acquired isolates. It is necessary to perform microbiological tests as soon as possible of biological material, i.e. patient samples (swabs, blood, urine), as well as air samples, swabs from staff uniforms, equipment, and surfaces, to isolate and identify the pathogens. Bacterial isolates are also tested for sensitivity to antibiotics using phenotypic and/or genotypic methods. Epidemiological surveillance is mandatory to identify patients with infection or colonization and to assess the risk factors that contributed to its occurrence. It is estimated that 30% and even up to 50% of hospital-acquired infections can be prevented by applying protocols and recommendations for prevention and control.

Key words: hospital-acquired infections, epidemiological surveillance, identification, disinfection

GAZDOVANJE ŠUMSKIM KULTURAMA POSEBNE NAMJENE U ZONAMA LJEKOVITIH BANJA SLATINA I SRPSKE TOPLICE

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Sažetak. Šume pružaju važne zdravstvene prednosti za ljude utičući na fizičko, mentalno i socijalo stanje. U cilju stvaranja povoljnijih uslova za funkcionisanje zdravstvenih objekata kao što su banje i prirodna lječilišta za oporavak i preventivnu zaštitu zdravlja ljudi često se u njihovoj neposrednoj blizini osnivaju šumske kulture kao šume posebne namjene. Cilj rada je da ukaže na značaj gazdovanja ovim šumama, za postizanje povoljnih uticaja na klimatske, rekreativne, higijenske i estetske ugođaje. Objekat istraživanja u ovom radu su šumske kulture crnog bora (*Pinus nigra* Arnold) osnovane u blizini banja u Srpskim Toplicama i Slatini. Metod rada je zasnovan na utvrđivanju osnovnih elemenata strukture na stalnim oglednim površinama. Nulta hipoteza o nepostojanju statistički značajnih razlika u osnovnim elementima strukture sastojina je odbačena na nivou značajnosti $p = 0,05$. Rezultati rada pokazuju da gazdovanje treba biti zasnovano na uzgojno kompozicijskom regulisanju sastava šuma, zadržavanju i unošenju vrsta drveća sa izraženim fitoncidnim svojstvima i poboljšanju vizuelnog efekta šuma. Gazdovanjem je potrebno uzgajati mješovite lišćarsko-četinarske šume kojim se obezbjeđuje njihova otpornost na negativne uticaje biotičke i abiotičke prirode. Ove šume trebaju imati pozitivan uticaj na čistoću vazduha, proizvodnju kiseonika, lučenje eteričkih ulja i ispoljavanje fitoncidnih svojstava.

Ključne riječi: zdravlje, zdravstveni objekti, gajenje šuma

MANAGEMENT OF FOREST PLANTATIONS OF SPECIAL PURPOSES IN THE ZONES OF THE MEDICAL SPAS OF SLATINA AND SERBIAN TOPLICA

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Abstract. Forests provide important health benefits for people by affecting their physical, mental and social well-being. In order to create more favorable conditions for the functioning of health facilities such as spas and natural spas for the recovery and preventive protection of people's health, forest cultures are often established in their immediate vicinity as special purpose forests. The goal of the work is to point out the importance of managing these forests, for achieving favorable effects on climatic, recreational, hygienic and aesthetic conditions. The object of research in this work are black pine (*Pinus nigra* Arnold) forest cultures established near the spas in Srpske Toplice and Slatina. The work method is based on the constant determination of the basic elements of the structure on permanent test surfaces. The null hypothesis of the absence of statistically significant differences in the basic elements of the stand structure was rejected at the significance level of $p = 0.05$. The results of the work show that management should be based on the silviculture and compositional regulation of forest composition, retention and introduction of tree species with pronounced phytoncide properties and improvement of the visual effect of forests. By management, it is necessary to silviculture mixed deciduous-coniferous forests, which ensures their resistance to negative influences of biotic and abiotic factors. These forests should have a positive impact on air cleanliness, oxygen production, secretion of essential oils and exhibit phytoncide properties.

Key words: health, health facilities, silviculture

**LABORATORIJSKA MEDICINA,
DIJAGNOSTIKA,
ZDRAVSTVENA NJEGA**

**LABORATORY MEDICINE,
DIAGNOSTICS, HEALTH CARE**

SHERLOCK – PLATFORMA ZA OTKRIVANJE NUKLEINSKIH KISELINA

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Sažetak. Nove analitičke strategije bazirane na savremenim tehnološkim postignućima imaju znatan uticaj na modernu mikrobiološku dijagnostiku. Genetska informacija pohranjena unutar nukleinskih kiselina postala je ciljno „mjesto“ mnogih molekularnih dijagnostičkih metoda primjenjenih u cilju otkrivanja i prepoznavanja različitih mikroorganizama. Svjesnost o raznolikosti patogena koji mogu izazvati lokalne i sistemske manifestacije važna je stavka prilikom očuvanja svjetskog zdravlja stoga precizno, brzo i pouzdano razlikovanje uzročnika obezbijeduje odgovarajući odgovor. Otkriće i razumijevanje mehanizama funkcionisanja grupisanih uobičajeno isprekidanih kratkih palindromskih ponavljanja (eng. *Clustered Regularly Interspaced Short Palindromic Repeats*, CRISPR) udruženih sa Cas proteinima uveliko je omogućilo razvoj nekoliko tehnologija koje već jesu ili će biti uvrštene u kliničku primjenu. Dva Cas proteina, Cas12 i Cas13, predstavljaju glavne enzime koji se nastoje kombinovati sa metodama pre-amplifikacije nukleinskih kiselina u cilju postizanja sekvenkvencionalno-specifičnog prepoznavanja. Specifični visoko-osjetljivi enzimski reporter (eng. *Specific High Sensitivity Enzymatic Reporter UnLOCKing*, SHERLOCK) je prototip prethodno navedenog spoja. Multipleksno, ultra-osjetljivo i visoko-specifično otkrivanje RNA i DNA iz pojedinog kliničkog uzorka izvodivo je posredstvom SHERLOCK platforme u kratkom vremenskom intervalu. Daljnje istraživanje predmetne metode praćeno novim implementacijama osiguraće kontinuiran napredak mikrobiološke dijagnostike. Predmetni rad opisuje osnovne principe rada SHERLOCK platforme te naglašava mogućnosti primjene iste u kliničkoj dijagnostici.

Ključne riječi: SHERLOCK, nukleinske kiseline, detekcija

SHERLOCK – A PLATFORM FOR NUCLEIC ACID DETECTION

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Abstract. New analytic strategies based on recent technological achievements have a big impact on modern microbiology diagnostics. The genetic information stored in nucleic acids became the target of many molecular methods which are used to detect and identify different microorganisms. Awareness of the variety of pathogens that can manifest in a number of both local and systematic ways is the main concern in maintaining global health. So, the precise, rapid and reliable determination between causative agents enables an adequate response. The discovery and understanding of functioning mechanisms of Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) and their associated proteins (Cas) presented an enormous opportunity for developing several technologies that were and will be incorporated into clinical usage. Two of the Cas proteins, Cas12 and Cas13, nowadays are the main enzymes that tend to be combined with methods of nucleic acid pre-amplification in order to achieve sequence-specific recognition. Specific High Sensitivity Enzymatic Reporter UnLOCKing (SHERLOCK) is the prototype of the above mentioned union. Multiplexed, ultra-sensitive and highly specific detection of RNA or DNA from a particular clinical sample can be carried out with the SHERLOCK platform in a short period of time. Further research along with different implementations of this method will ensure continued improvement of analytic pathways that are an essential part of the microbial diagnostics. This paper explains main working principles of the SHERLOCK platform and point out the possibilities of its applications in clinical diagnostics.

Key words: SHERLOCK, nucleic acids, detection

PAMETNI PRENOSIVI I PERSONALIZOVANI SISTEMI ANALIZE

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Sažetak. U današnjem digitalnom dobu, tehnološki napredak otvara vrata novim mogućnostima u medicinskom sektoru. Pametni, prenosivi i personalizovani sistemi analize u medicini predstavljaju revolucionarni korak ka unapređenju dijagnostike, praćenju zdravlja i personalizovane terapije. Kombinacija senzora, mobilnih uređaja i algoritama omogućava kontinuirano praćenje vitalnih parametara poput pulsa, krvnog pritiska, nivoa glukoze i drugih biomarkera, a samim tim i ranu detekciju potencijalnih zdravstvenih problema. Algoritmi vještačke inteligencije mogu analizirati istoriju bolesti, genetske podatke, laboratorijske rezultate kako bi identifikovali pacijente sa većim rizikom od srčanih bolesti, dijabetesa ili drugih oboljenja. Cilj ovog rada je skretanje pažnje na optimizaciju rada u zdravstvenim ustanovama, omogućavanje brže dijagnostike, mogućnost blagovremenog djelovanja i liječenja, personalizovani pristup zdravstvenoj zaštiti, prevencija bolesti a time i smanjenje troškova dijagnostike, liječenja i rehabilitacije. mHealth (mobilno zdravstvo) je termin koji se koristi kao sinergija mobilne tehnologije, mobilnog računarstva, medicinske informatike, medicinskih senzora i komunikacijskih tehnologija, čiji je zajednički cilj njega i praćenje zdravstvenog stanja pacijenta. mHealth otvara vrata za inovativne pristupe u dijagnostici, praćenju bolesti i promovisanju prevencije zdravlja. Pored kontinuiranog praćenja vitalnih funkcija, pametni senzori mogu pružiti prilagođene savjete o načinu života i upravljanju bolesti. Posebna prednost mhealth-a jeste pristup zdravstvenoj zaštiti u ruralnim i udaljenim područjima.

Ključne riječi: optimizacija rada zdravstvenih ustanova, mHealth, tehnološka evolucija u zdravstvu, vještačka inteligencija u medicini

SMART PORTABLE AND PERSONALIZED ANALYSIS SYSTEMS

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Abstract. In today's digital age, technological advancement opens the door to new possibilities in the medical sector. Smart, portable and personalized analysis systems in medicine represent a revolutionary step towards improving diagnostics, health monitoring and personalized therapy. The combination of sensors, mobile devices and algorithms enables continuous monitoring of vital parameters such as pulse, blood pressure, glucose level and other biomarkers, thereby enabling early detection of potential health issue. Artificial intelligence algorithms can analyze medical history, genetic data, laboratory results to identify patients at higher risk of heart disease, diabetes or other diseases. The aim of this paper is to draw attention to optimizing work in healthcare facilities, enabling faster diagnostics, the possibility of timely action and treatment, personalized access to health care, disease prevention and thus reducing the costs of diagnostics, treatment and rehabilitation. mHealth (mobile health) is a term used as a synergy of mobile technology, mobile computing, medical informatics, medical sensors and communication technologies, the common goal of which is care and monitoring of the patient's health. mHealth opens the door for innovative approaches in diagnostics, monitoring of diseases and promotion of health prevention. In addition to continuous monitoring of vital functions, smart sensors can provide tailored advice on lifestyle and disease management. A special advantage of mHealth is access to health care in rural and remote areas.

Key words: optimization of healthcare facility operations, mHealth, technological evolution in healthcare, artificial intelligence in medicine

PRIMJENA STATISTIČKIH METODA U EKSTERNOJ PROVJERI KVALITETA U MEDICINSKOJ LABORATORIJI

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Sažetak. Podaci dobijeni tokom laboratorijskog ispitivanja uzoraka predstavljaju važan element u procesima liječenja pacijenata. Odluke ljekara u najvećoj mjeri zavise od podataka dobijenih iz laboratorije. Laboratorijska ispitivanja lošeg kvaliteta mogu izazvati velike finansijske, zdravstvene i socijalne posljedice. Potreba za stalnim poboljšanjem kvaliteta u radu medicinskih laboratorija nameće se kao prioritet. Kontrola kvaliteta procesa u medicinskim laboratorijama se odnosi na kontrolu aktivnosti povezanih sa rukovanjem uzorcima i sa procesima ispitivanja. Kontrola kvaliteta se provodi kako bi se osigurala tačnost i pouzdanost ispitivanja. Eksterna provjera kvaliteta (EQA) je čest način praćenja kvaliteta laboratorijskih ispitivanja. Tokom EQA ocjenjuju se analitičke performanse laboratorije u odnosu na slične laboratorije (laboratorije koje koriste istu metodu ili isti instrument), referentne standarde i/ili referentne laboratorije. Cilj ovog rada odnosi se na prepoznavanje problema u radu nove laboratorije za biohemiju na Visokoj medicinskoj školi u Prijedoru i provođenje odgovarajućih korektivnih mjera u svrhu unapređenja kvaliteta. U radu je proveden postupak ispitivanja osposobljenosti laboratorije za provođenje analize određivanja lipidnog statusa (ukupni kolesterol, dobri kolesterol, loši kolesterol i triglicerid u krvi). Osim laboratorije Visoke medicinske škole Prijedor, u EQA je učestvovala ovlaštena laboratorija Doma zdravlja Prijedor. Kao materijal za ispitivanje korišteni su prethodno ispitani uzorci krvi. Studentov t-test je korišten za poređenje rezultata dobijenih u dvije laboratorije. Kao nivo rizika u svim statističkim analizama postavljena na granica $\alpha=0,05$. Rezultati ovog međulaboratorijskog poređenja pomoći će osoblju laboratorije u ocjeni pouzdanosti metoda, materijala i opreme, te u ocjeni i praćenju obuke studenata medicinsko-laboratorijskog inženjerstva.

Ključne riječi: Medicinske laboratorije, Eksterna ocjena kvaliteta, EQA, lipidni status

APPLICATION OF STATISTICAL METHODS IN EXTERNAL QUALITY CONTROL OF THE MEDICAL LABORATORY

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Abstract. The data obtained during the laboratory examination of samples represent an important element in the treatment processes of patients. The decisions of the doctor depend to the greatest extent on the data obtained from the laboratory. Poor quality laboratory tests can cause major financial, health and social consequences. The need for continuous quality improvement in the work of medical laboratories is imposed as a priority. Process quality control in medical laboratories refers to the control of activities related to sample handling and testing processes. Quality control is carried out to ensure the accuracy and reliability of the test. External quality assurance (EQA) is a common way of monitoring the quality of laboratory tests. During EQA, the analytical performance of the laboratory is evaluated in relation to similar laboratories (laboratories using the same method or the same instrument), reference standards and/or reference laboratories. The aim of this paper is to identify problems in the work of the new biochemistry laboratory at the Medical School in Prijedor and to implement appropriate corrective measures in order to improve quality. In the work, the procedure of testing the competence of the laboratory for carrying out the analysis of determination of lipid status (total cholesterol, good cholesterol, bad cholesterol and triglyceride in the blood) was carried out. In addition to the laboratory of the College of Health Science Prijedor, the authorized laboratory of the Prijedor Health Center participated in the EQA. Previously tested blood samples were used as test material. Student's t-test was used to compare results obtained in two laboratories. The level of risk in all statistical analyzes was set at the limit $\alpha = 0.05$. The results of this interlaboratory comparison will help the laboratory staff in evaluating the reliability of methods, materials, and equipment, and in evaluating and monitoring the training of medical-laboratory engineering students.

Key words: Medical laboratories, External quality assessment, EQA, lipid status

LIJEČENJE PACIJENATA NAKON LABORATORIJSKI POTVRĐENE DIJAGNOZE *CLOSTRIDIUM DIFFICILE* INFEKCIJE

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Sažetak. Usklađivanje sa smjernicama za liječenje *Clostridium difficile* infekcije (CDI) je neophodno kako bi se pravilno i uspješno liječila CDI i spriječilo ponovno pojavljivanje infekcije. Pogrešno liječenje CDI pacijenata može da dovede do suboptimalnih režima, kao što su neizliječenje ili povećani rizik od recidiva ili nepotrebnog uzimanja lijekova i većih bolničkih troškova. Cilj ovog istraživanja je bio da se procijeni pridržavanje algoritma liječenja CDI od momenta postavljanja dijagnoze: odgovarajući antibiotik, način primjene, doza i trajanje na osnovu ozbiljnosti infekcije i epizode. Sprovedeno je retrospektivno kohortno istraživanje CDI slučajeva kojima je dijagnoza postavljena na prijemu ili tokom hospitalizacije. U terapiji naših pacijenata sa dijagnozom postantimikrobne dijareje uzrokovane sa *C. difficile* najčešće su propisivani metronidazol i vankomicin. Rezultati su pokazali da je postojala značajna razlika ($p < 0,001$) u načinu liječenja pacijenata sa CDI na osnovu težine kliničke slike, tako da 54,3% pacijenta nije liječeno u skladu sa smjernicama. Najveća nepravilnost je uočena kod pacijenata sa teškom kliničkom slikom (85,7%) i sa teškom kliničkom slikom sa komplikacijama (82,6%). Pravilan način izbora liječenja se uglavnom pokazao kod pacijenata sa blagom i/ili umjerenom kliničkom slikom (63,9%). Uočena je statistički značajna razlika i u načinu liječenja CDI kod pacijenata sa primarnom infekcijom i sa ponovljenom infekcijom ($p=0,006$). Kod većine oblika ispoljavanja kliničke slike CDI, od pogrešne terapije u preko 50% slučajeva je propisivan metronidazol. Pravilan način izbora liječenja i poštovanje trenutno važećih smjernica za liječenje pacijenata sa CDI infekcijama treba da se primjenjuje na osnovu težine kliničke slike. Kontinuirana edukacija zdravstvenih radnika o dijagnostici i liječenju CDI može da bude od koristi naročito ako su prilagođavane smjernice.

Ključne riječi: *Clostridium difficile* infekcija, antibiotici, probiotici, algoritam, smjernice

TREATMENT OF PATIENTS AFTER LABORATORY CONFIRMED DIAGNOSIS OF *CLOSTRIDIUM DIFFICILE* INFECTION

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Abstract. Compliance with the guidelines for the treatment of *Clostridium difficile* infection (CDI) is necessary to properly and successfully treat CDI and prevent recurrence of infection. Wrong treatment of CDI patients can lead to suboptimal regimens, such as failure to cure or increased risk of relapse or unnecessary medication and higher hospital costs. The aim of this study was to assess adherence to the CDI treatment algorithm from the moment of diagnosis: this was defined as therapy consisting of the appropriate antibiotic, route, dose and duration based on the severity of infection and episode. A retrospective cohort study of CDI cases diagnosed on admission or during hospitalization was conducted. In the treatment of our patients diagnosed with post-antimicrobial diarrhea caused by *C. difficile*, metronidazole and vancomycin were most often prescribed. The results showed that there was a difference ($p < 0.001$) in the way CDI patients were treated based on the severity of clinical presentation, so that 54.3% of patients was not treated according to the guidelines. The greatest irregularity was observed in patients with severe clinical presentation (85.7%) and with complications (82.6%). The treatment non-adherence was mainly shown in patients with a mild and/or moderate clinical presentation (63.9%). A statistically significant difference was observed in the treatment method of CDI in patients with primary infection and with repeated infection ($p = 0.006$). In most forms of manifestation of CDI, metronidazole was prescribed in over 50% of the wrong therapy. The adherence of choosing the treatment and respect the currently valid guidelines for the treatment of patients with CDI infections must be applied based on the severity of the clinical presentation. Continuing education of healthcare workers on the diagnosis and treatment of CDI can be beneficial, especially if the guidelines are revised.

Key words: *Clostridium difficile* infection, antibiotics, probiotics, algorithm, guidelines

KVANTITATIVNA VALORIZACIJA METODE OPERATIVNOG LIJEČENJA DEFORMITETA HALLUX VALGUSA

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Sažetak. Hallux valgus je relativno čest i sa više aspekata kompleksan deformitet prednjeg dijela stopala. Indikacija za operativno liječenje su tegobe vezane za stopalo sa izraženim deformitetom, a koje nisu riješene primjenom neoperativnog liječenja. Najčešće se radi o smetnjama sa korištenjem konvencionalne obuće, pojava bola u predjelu buniona ili prednjeg dijela stopala te estetske smetnje. Uspješnost liječenja hallux valgusa (L_M) operativnom metodom (M) karakteriše stepen realizacije ciljeva operativnog liječenja i to: maksimalne korekcije deformiteta uz data ograničenja (C_1), svođenje smetnji i tegoba na koje se pacijent žali na minimum (C_2), povećanje dinamičke stabilnosti i funkcionalnosti stopala uz postojeća ograničenja (C_3), te minimizacija troškova operativnog i postoperativnog liječenja pacijenta (C_4). Kvantitativna vrijednost realizacije svakog cilja ocijenjena je grupom indikatora ($p_i, i=1,2,...$), a uspješnost metode (M) operativnog liječenja predstavlja kumulativnu vrijednost proizvoda stepena realizacije ciljeva ($C_i, i = 1,2,3,4$) i njihove važnosti W_i , a određena relacijom $L_M = \sum_{i=1}^4 W_i C_i$. Stopa korekcije deformiteta, (C_1) i troškovi operativnog i postoperativnog liječenja (C_4) ocijenjeni su formulisanim relacijama. Dok stepen realizacije ciljeva (C_2) i (C_3) definišemo kao zbir proizvoda težinskog značaja indikatora (w_i) i njegove stope realizacije (r_{pi}) tokom primjene operativne metode M, a određen je relacijom $C_j = \sum_{i=1}^k w_i \cdot r_{pi}, j = 2,3$. Izloženi postupak kvantitativne valorizacije operativnog liječenja pokazan je na uzorku od 396 operativno liječenih stopala, i upoređene su dvije metode liječenja deformiteta u tom uzorku, i to metoda Chevron i metoda operativnog liječenja po Goldenu.

Ključne riječi: Hallux valgus deformitet, operativne metode liječenja, valorizacija operativnog liječenja

QUANTITATIVE VALUATION OF THE METHOD OF OPERATIVE TREATMENT OF HALLUX VALGUS DEFORMITY

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Abstract. Hallux valgus is a relatively common and multifaceted complex deformity of the front part of the foot. Indications for operative treatment are complaints related to the foot with pronounced deformity, which have not been resolved by non-operative treatment. Most often, it is about problems with the use of conventional footwear, the appearance of pain in the area of the bunion or the front part of the foot, and aesthetic problems. The success of the treatment of hallux valgus (L_M) with the operative method (M) is characterized by the degree of realization of the goals of the operative treatment, namely: maximum correction of the deformity with the given limitations (C_1), reduction of disturbances and complaints complained of by the patient to a minimum (C_2), increase of dynamic stability and functionality of the foot with existing limitations (C_3), and minimization of the costs of operative and postoperative treatment of the patient (C_4). The quantitative value of the realization of each goal was evaluated by a group of indicators ($p_i, i=1,2,...$), and the success of the method (M) of operative treatment represents the cumulative value of the product of the degree of goal realization ($C_i, i=1,2,3,4$) and their importance W_i , determined by the relation $L_M = \sum_{i=1}^4 W_i C_i$. The rate of deformity correction, (C_1) and the costs of operative and postoperative treatment (C_4) were evaluated by formulated relationships. While the degree of realization of goals (C_2) and (C_3) is defined as the sum of the product of the weighted significance of the indicator (w_i) and its realization rate (r_{pi}) during the application of operational method M, and is determined by the relation $C_j = \sum_{i=1}^k w_i \cdot r_{pi}, j = 2,3$. The exposed procedure of quantitative valorization of operative treatment was demonstrated on a sample of 396 operatively treated feet, and two methods of deformity treatment in that sample were compared, namely the Chevron method and the Golden operative treatment method.

Key words: Hallux valgus deformity, operative methods of treatment, valorization of operative treatment

RADIOMIKA

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Sažetak. Radiomika je inovativna disciplina u medicini koja povezuje podatke dobivene korišćenjem savremenih radioloških dijagnostičkih tehnologija s molekularnim karakteristikama tkiva, omogućavajući dublje razumevanje bolesti. Ovaj interdisciplinarni pristup omogućuje precizniju dijagnostiku, praćenje bolesti i prilagođavanje terapije prema individualnim karakteristikama pacijenta, a ima i prediktivnu vrednost u pogledu prevencije i prognoze bolesti. Kombinujući informacije iz kompjuterske tomografije (CT) i magnetne rezonance (MRI) s molekularno-genetskim podacima, radiomika spada u oblast personalizovane medicine i otvara vrata razvoju ciljane terapije i optimizaciji rezultata lečenja. Integracija savremene radiologije i molekularne biologije u radiomici obećava napredak u dijagnostičkoj tačnosti i pruža temelje za budući razvoj personalizovane medicinske nege.

Ključne riječi: medicina, bolest, dijagnostika, terapija

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Abstract. Radiomics is an innovative discipline in medicine that connects data obtained using modern radiological diagnostic technologies with the molecular characteristics of tissues, enabling a deeper understanding of diseases. This interdisciplinary approach enables more accurate diagnosis, monitoring of the disease and adjustment of therapy according to the individual characteristics of the patient, and it also has predictive value in terms of disease prevention and prognosis. By combining information from computed tomography (CT) and magnetic resonance imaging (MRI) with molecular genetic data, radiomics belongs to the field of personalized medicine and opens the door to the development of targeted therapy and optimization of treatment results. The integration of modern radiology and molecular biology in radiomics promises advances in diagnostic accuracy and provides the foundation for the future development of personalized medical care.

Key words: medicine, disease, diagnostics, therapy

INTRAHOSPITALNE/NOZOKOMIJALNE INFEKCIJE

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Sažetak. Intrahospitalne infekcije, koje se nazivaju i nozokomijalne, su infekcije koje pacijenti stiču tokom boravka u bolnici, s tim da se uzima u obzir da pacijent potvrđeno nije imao infekciju na prijemu. Učestalost intrahospitalnih infekcija je pitanje globalne zabrinutosti, posebno zbog pojave patogena otpornih na više lijekova, kao što je *Klebsiella pneumoniae*. Cilj pregleda literature jeste utvrđivanje potrebe za strogim mjerama prevencije ovih infekcija. Više je faktora za koje je utvrđeno da su povezani sa razvojem infekcija u bolničkom okruženju. Uključuju povećanu izloženost kontaminiranim površinama i kontakte sa pojedincima tokom intrahospitalnih transfera. U kontekstu jedinica intenzivne njege, invazivni uređaji kao što su mehanički ventilatori, centralni venski kateteri i urinarni kateteri identifikovani su kao potencijalni izvori nozokomijalnih infekcija. Naponi za sprečavanje i kontrolu intrahospitalnih infekcija zahtijevaju primjenu standardizovanih procesa i procedura. Ovo uključuje korišćenje odgovarajućih protokola asepsa i antiseptika. Važno je napomenuti da učestalost intrahospitalnih infekcija može varirati u različitim bolničkim okruženjima, a ograničeni resursi i infrastruktura doprinose većoj stopi infekcije. Nozokomijalne infekcije mogu dovesti do niza posljedica. To uključuje povećanu stopu morbiditeta i smrtnosti među pacijentima, produženi boravak u bolnici, eskalirane troškove zdravstvene zaštite zbog potrebe za dodatnim tretmanima i intervencijama, kao i komplikacije i štetne efekte na zdravlje pacijenata. Ovi štetni efekti na kraju dovode do smanjenja ukupnog blagostanja i kvaliteta života pogođenih pojedinaca. Dodatno, razvoj rezistencije na antibiotike kao rezultat infekcija predstavlja značajne izazove u efikasnom liječenju ovih infekcija. Nozokomijalne infekcije mogu imati i značajan uticaj na same zdravstvene ustanove - povećano opterećenje pružaoca zdravstvenih usluga, dodatno opterećenje resursa i potencijal za štetu reputaciji ustanove. Stoga je ključno dati prioritet naporima usmjerenim na sprečavanje i kontrolu intrabolničkih infekcija kako bi se ublažili ove posljedice i osigurali pružanje sigurnih i kvalitetnih zdravstvenih usluga.

Ključne riječi: intrahospitalne infekcije, rezistenti patogeni, uloga prevencije, mjesta visokog rizika, bolnički premještaji

INTRAHOSPITAL/NOZOCOMIAL INFECTIONS

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Abstract. Intrahospital infections, also known as nosocomial infections, are infections that patients acquire during their hospital stay, with the consideration that the patient did not have a confirmed infection upon admission. The frequency of intrahospital infections is a global concern, especially due to the emergence of multidrug-resistant pathogens, such as *Klebsiella pneumoniae*. The literature review aims to determine the need for strict prevention measures for these infections. Several factors have been identified as associated with developing infections in the hospital environment. These include increased exposure to contaminated surfaces and contact with individuals during intrahospital transfers. In the context of intensive care units, invasive devices such as mechanical ventilators, central venous catheters, and urinary catheters have been identified as potential sources of nosocomial infections. Efforts to prevent and control intrahospital infections require the implementation of standardized processes and procedures. This includes the use of appropriate asepsis and antisepsis protocols. It is important to note that the frequency of intrahospital infections may vary in different hospital settings, and limited resources and infrastructure contribute to higher infection rates. Nosocomial infections can lead to a range of consequences. These include increased morbidity and mortality rates among patients, prolonged hospital stays, escalated healthcare costs due to the need for additional treatments and interventions, as well as complications and adverse effects on patients' health. Ultimately, these harmful effects result in reduced overall well-being and quality of life for affected individuals. Additionally, the development of antibiotic resistance as a result of infections poses significant challenges in effective treatment. Nosocomial infections can also have a significant impact on healthcare institutions themselves, including increased burden on healthcare providers, additional strain on resources, and the potential for damage to the institution's reputation. Therefore, prioritizing efforts aimed at preventing and controlling intrahospital infections is crucial to mitigate these consequences and ensure the provision of safe and high-quality healthcare services.

Key words: intrahospital infections, resistant pathogens, prevention role, high-risk settings, intrahospital transfers

STRAH OD HIPOGLIKEMIJE KOD PEDIJATRIJSKIH PACIJENATA SA DIJABETESOM TIP 1 I NJIHOVIH RODITELJA

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Sažetak. Različite medicinske tehnologije za upravljanje inzulinskom terapijom su registrovane širom svijeta; međutim, nisu podjednako dostupne pedijatrijskim pacijentima sa dijabetesom melitus tip 1 (T1DM), a većina djece i adolescenata sa T1DM ne postiže preporučene terapijske/glikemijske ciljeve. Štaviše, roditeljski strah od hipoglikemije uzrokuje suboptimalno pridržavanje preporučenom terapijskom režimu (tzv. *“ponašanje u vezi s izbjegavanjem hipoglikemije”*), što negativno utječe na metaboličku kontrolu njihove djece. Stoga je ključno razumjeti psihosocijalne karakteristike djece i adolescenata sa T1DM i njihovih roditelja kako bi se pružila optimalna njega usmjerena na pacijenta/porodicu. Ovaj pregledni rad imao je za cilj sumirati kako strah od hipoglikemije onemogućava djecu i adolescente sa T1DM i njihove roditelje za optimalno upravljanje bolešću. Dostupna literatura procijenjena je iz baza podataka: *PubMed*, *ScienceDirect* i *Google Scholar*. Mnogobrojne studije sagledale su složenost svakodnevnih zadataka u (samo)kontroli T1DM (uključujući fizički, kognitivni i emocionalni angažman pedijatrijskih pacijenata i njihovih roditelja). Također, potvrđeno je da pojava teške i noćne hipoglikemije predstavlja jedan od najintenzivnijih strahova vezanih za akutno pogoršanje zdravlja djeteta sa T1DM. Ova zabrinutost može dovesti do maladaptivnog ponašanja i neadherentnosti u vidu subdoziranosti inzulina, prekršaja u ishrani i izbjegavanja fizičke aktivnosti. Stoga je ključno provoditi edukativne intervencije za djecu i adolescente sa T1DM i/ili njihove roditelje kako bi se smanjio strah od hipoglikemije i poboljšale aktivnosti samozbrinjavanja.

Ključne riječi: djeca, adolescenti, dijabetes tip 1, aktivnosti samonjege, strah od hipoglikemije

FEAR OF HYPOGLYCEMIA IN PEDIATRIC PATIENTS WITH TYPE 1 DIABETES AND THEIR PARENTS

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Abstract. Various medical technologies for managing insulin therapy have been registered worldwide; however, they are not equally accessible to pediatric patients with type 1 diabetes mellitus (T1DM), and the majority of children and adolescents with T1DM do not achieve the recommended therapeutic/glycemic targets. Moreover, parental fear of hypoglycemia leads to suboptimal adherence to the recommended therapeutic regimen (so-called "*avoidance behavior related to hypoglycemia*"), negatively impacting the metabolic control of their children. Therefore, it is crucial to understand the psychosocial characteristics of children and adolescents with T1DM and their parents in order to provide optimal patient/family-centered care. This review aimed to summarize how fear of hypoglycemia hinders children and adolescents with T1DM and their parents from optimal disease management. Available literature was assessed from the databases: *PubMed*, *ScienceDirect*, and *Google Scholar*. Numerous studies have examined the complexity of daily tasks in the (self-)management of T1DM (including the physical, cognitive, and emotional engagement of pediatric patients and their parents). It has also been confirmed that the occurrence of severe and nocturnal hypoglycemia represents one of the most intense fears related to acute deterioration of a child's health with T1DM. This concern can lead to maladaptive behavior and non-adherence in the form of insulin underdosing, dietary violations, and avoidance of physical activity. Therefore, it is crucial to implement educational interventions for children and adolescents with T1DM and/or their parents to reduce fear of hypoglycemia and improve self-care activities.

Key words: children, adolescents, type 1 diabetes, self-care activities, fear of hypoglycemia

ZDRAVSTVENA PISMENOST PACIJENATA SA DIJABETES MELITUSOM TIP 2

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Sažetak. Dijabetes mellitus je jedno od vodećih hroničnih oboljenja, kako u svijetu tako i u našoj zemlji, i smatra se jednom od najvećih pandemija savremenog društva, a zbog velikog broja oboljelih i smrtnosti do koje dovodi, mnogi ovu bolest smatraju i ekvivalentom crne smrti 14. vijeka. Shodno tome sprovedeno je istraživanje čiji je cilj bio da se procijeni nivo zdravstvene pismenosti pacijenata sa dijabetes melitusom tip 2, kao i da se identifikuju sociodemografske i zdravstvene karakteristike koje su povezane sa niskim nivoom zdravstvene pismenosti. Ispitivanje zdravstvene pismenosti korisnika usluga primarne zdravstvene zaštite sa dijabetes melitusom tip 2 sprovedeno je kao studija presjeka na slučajno odabranom reprezentativnom uzorku tokom 2018/2019. godine. Ova studija presjeka obuhvatila je 150 pacijenata sa dijabetes melitusom tip 2 u sedam domova zdravlja u Republici Srpskoj. Kao instrumenti istraživanja korišteni su: Skraćena verzija TOFHLA upitnika (STOFHLA) i sociodemografski upitnik koji je posebno kreiran za potrebe ovog istraživanja. Pored popunjavanja upitnika kod ispitanika se uzimao i uzorak krvi radi određivanja nivoa HbA1c. Od ukupnog broja ispitanika sa dijabetesom u ovom istraživanju 51 (34%) je imalo neadekvatnu zdravstvenu pismenost, dvadeset ispitanika (13,3%) je imalo marginalnu zdravstvenu pismenost, dok je adekvatnu zdravstvenu pismenost imalo 79 (52,7%) ispitanika. Zdravstvena pismenost korisnika usluga PZZ sa dijabetes melitusom tip 2 je niska.

Ključne riječi: zdravstvena pismenost, primarna zdravstvena zaštita, dijabetes mellitus tip 2

HEALTH LITERACY OF PATIENTS WITH TYPE 2 DIABETES MELITUS

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Abstract. Diabetes mellitus is one of the leading chronic diseases both in the world and in our country, and it is considered one of the biggest pandemics of modern society, and due to the large number of patients and the mortality it leads to, many consider this disease the equivalent of the Black Death of the 14th century. Accordingly, we conducted a study whose aim was to assess the level of health literacy of patients with type 2 diabetes mellitus, as well as to identify sociodemographic and health characteristics that are associated with a low level of health literacy. The examination of health literacy of users of primary health care services with type 2 diabetes mellitus was conducted as a cross-sectional study on a randomly selected representative sample during 2018/2019. years. This cross-sectional study included 150 patients with type 2 diabetes mellitus in seven health centers in Republika Srpska. The following research instruments were used: a shortened version of the TOFHLA questionnaire (STOFHLA) and a sociodemographic questionnaire that was specially created for the purposes of this research. In addition to filling out the questionnaire, a blood sample was also taken from the subjects to determine the HbA1c level. Of the total number of respondents with diabetes in our research, 51 (34%) had inadequate health literacy, twenty respondents (13.3%) had marginal health literacy, while 79 (52.7%) respondents had adequate health literacy. The health literacy of users of PHC services with type 2 diabetes mellitus is low.

Key words: health literacy, primary health care, diabetes mellitus type 2

PROCJENA RIZIKA ZA PAD KOD OSOBA TREĆE ŽIVOTNE DOBI SA UMJERENOM MENTALNOM OMETENOŠĆU I BEZ MENTALNE OMETENOSTI

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Sažetak. Padovi su česti kod starijih osoba i utiču na mortalitet, morbiditet, gubitak funkcionalnog kapaciteta i institucionalizaciju. Preventivne strategije za smanjene rizika od pada obuhvataju: procjenu i ponovnu procjenu rizika od pada, vizuelno obilježavanje pacijenata sa visokim rizikom, razgovor sa pacijentom o njegovom stepenu rizika za pad te edukacija pacijenata, članova njegove porodice i osoblja o preventivnim intervencijama. Osnovni cilj istraživanja je procijeniti rizik za pad kod osoba treće životne dobi sa umjerenom mentalnom ometenošću i osoba treće životne dobi bez mentalne ometenosti. Prospektivnom studijom je obuhvaćeno 60 ispitanika muškog pola, odabranih metodom namjernog uzorkovanja, koji borave u JU Dom za lica sa invaliditetom Prijedor i JU Dom za starija lica Prijedor. Primjenom testa Timed Up and Go vršena je procjena funkcionalne mobilnosti i rizika za pad, pri čemu je uočeno da je većina ispitanika (53,3%) u visokom riziku za pad pri čemu nije uočena statistički značajna razlika ($t = -0,461$; $p = 0,173$). U cilju procjene dinamičke ravnoteže u jednostavnom zadatku, korišten je modifikovani Funkcionalni test dohvatanja na kom su osobe sa umjerenom mentalnom ometenošću u prosjeku stabilnost zadržavali do 69,67cm, a osobe bez mentalne ometenosti 67,93 cm ($t = 0,737$; $p = 0,071$). Prilikom procjene statičke posturalne ravnoteže i kontrole balansa ni jedan od ispitanika nije uspio uraditi Test stajanja na jednoj nozi ($t = -0,220$; $p = 0,619$). U grupama ispitanika sa mentalnom ometenošću i bez mentalne ometenosti nisu dobijene statistički značajne razlike, te se zaključuje da prisustvo umjerene mentalne ometenosti ne povećava rizik od pada u trećoj životnoj dobi.

Ključne riječi: stare osobe, padovi, mentalna ometenost

ASSESSMENT OF THE RISK FOR FALLS IN ELDERLY PEOPLE WITH MODERATE MENTAL DISABILITY AND WITHOUT MENTAL DISABILITY

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Abstract. Falls are common in the elderly and have influence on mortality, morbidity, loss of functional capacity and institutionalization. Preventive strategies to reduced fall risk include: assessing and reassessing fall risk, visually marking high-risk patients, talking to the patient about their level of fall risk, and educating patients, family members, and staff about preventive interventions. The main goal of the research is to assess the risk of falling in elderly people with moderate mental retardation and elderly people without mental retardation. The prospective study included 60 male respondents, selected using the method of purposive sampling, who reside in the Home for People with Disabilities Prijedor and the Home for the Elderly Prijedor. The Timed Up and Go test was used to assess functional mobility and the risk of falling, and it was observed that the majority of respondents (53.3%) were at high risk of falling, and no statistically significant difference was observed ($t = -0.461$; $p = 0.173$). In order to assess dynamic balance in simple task, a modified Functional Reach Test was used, in which persons with moderate mental retardation maintained stability up to 69.67 cm on average, and persons without mental retardation 67.93 cm ($t = 0.737$; $p = 0.071$). During the assessment of static postural and balance control, none of the subjects was able to perform Single Leg Stance ($t = -0.220$; $p = 0.619$). No statistically significant differences were obtained in the groups of respondents with mental disability and without mental disability, and it is concluded that the presence of moderate mental disability does not increase the risk of falling in the third age.

Key words: elderly people, falls, mental retardation

SAVREMENI PRINCIPI AKADEMSKOG INTEGRITETA

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Sažetak. Akademski integritet predstavlja temeljni koncept koji obuhvata poštovanje etičkih principa i moralnih vrijednosti u svim aspektima akademskog rada. Ključni aspekti akademskog integriteta uključuju iskrenost, samostalnost, originalnost, odgovorno citiranje i referenciranje, poštovanje autorskih prava, etičko ponašanje u istraživanju te poštenje u svim istraživačkim i edukativnim aktivnostima. Očuvanje akademskog integriteta ključno je za održavanje pouzdanosti i kredibiliteta akademskih institucija i istraživača. Edukacijom o principima akademskog integriteta, davanjem jasnih smjernica i implementacijom alata za detekciju plagijata, institucije postižu kulturu poštenja i etičkog ponašanja među studentima, istraživačima i ostalim članovima akademske zajednice. U ovom radu detaljno će se razmotriti ključni elementi strategije unapređenja akademskog integriteta, koje uključuju: edukaciju o akademskom integritetu koja podiže svijest i promovise etičke principe u akademskoj zajednici; jasno i transparentno institucionalno definisanje smjernica akademskog integriteta koje osiguravaju odgovornost u procesu istraživanja; fokus nastavnika i istraživača na razvijanje kritičkog razmišljanja i analitičkih vještina kod studenata, podsticanjem samostalnog rada i izbjegavanjem plagijata; implementaciju alata za detekciju plagijata u cilju identifikacije i sprečavanja kršenja akademskog integriteta; jasno definisanje i transparentnu primjenu kriterijuma za evaluaciju akademskog rada, s naglaskom na originalnost i analitičke vještine; podsticanje saradnje i otvorenog dijaloga unutar akademske zajednice, što doprinosi jačanju kulture akademskog integriteta; jasno definisane sankcije za kršenje akademskog integriteta, neophodne za održavanje poštenog i etičkog okruženja. Kombinacijom ovih strategija, akademske institucije mogu efikasno promovisati kulturu akademskog integriteta i osigurati pouzdanost i kredibilitet nauke i obrazovanja. Očuvanje akademskog integriteta bitno je za individualni razvoj studenata i istraživača, te za napredak društva.

Ključne riječi: akademski integritet, etika, obrazovanje, nauka, plagijatorstvo, smjernice, edukacija, istraživanje

MODERN PRINCIPLES OF ACADEMIC INTEGRITY

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Abstract. Academic integrity is a fundamental concept that includes respect for ethical principles and moral values in all aspects of academic work. Key aspects of academic integrity include sincerity, independence, originality, responsible citation and referencing, respect for copyright, ethical conduct in research, and honesty in all research and educational activities. Preserving academic integrity is crucial to maintaining the trustworthiness and credibility of academic institutions and researchers. By educating about the principles of academic integrity, providing clear guidelines and implementing plagiarism detection tools, institutions achieve a culture of honesty and ethical behavior among students, researchers and other members of the academic community. This paper will discuss in detail the key elements of the academic integrity improvement strategy, which include: academic integrity education that raises awareness and promotes ethical principles in the academic community; clear and transparent institutional definition of academic integrity guidelines that ensure accountability in the research process; the focus of teachers and researchers on developing critical thinking and analytical skills in students, encouraging independent work and avoiding plagiarism; implementation of plagiarism detection tools in order to identify and prevent violations of academic integrity; clearly defining and transparently applying criteria for evaluating academic work, with an emphasis on originality and analytical skills; encouraging cooperation and open dialogue within the academic community, which contributes to strengthening the culture of academic integrity; clearly defined sanctions for violating academic integrity, necessary to maintain a fair and ethical environment. By combining these strategies, academic institutions can effectively promote a culture of academic integrity and ensure the reliability and credibility of science and education. Preservation of academic integrity is important for the individual development of students and researchers, and for the progress of society.

Key words: academic integrity, ethics, education, science, plagiarism

AKADEMSKI INTEGRITET U NAUČNIM ČASOPISIMA

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Sažetak. Akademski integritet predstavlja ključni princip u izdavaštvu i uredništvu naučnih časopisa. Njegovo očuvanje zavisi o poštenom i etičkom ponašanju svih učesnika u procesu izdavaštva, uključujući autore, recenzente, urednike i izdavače i poštovanje principa akademskog integriteta neophodno je za održavanje povjerenja u naučnu literaturu i za osiguranje napretka nauke. Od autora se očekuje da prijave originalna istraživanja koja nisu prethodno objavljena ili prijavljena za objavljivanje, da navedu sve saradnike i izvore finansiranja istraživanja, da pravilno citiraju korištene radove, da otvoreno iznesu sve podatke i metodologiju istraživanja te odgovore na pitanja recenzenata i urednika u vezi sa istraživanjem. Od recenzenata se očekuje da nepristrasno i objektivno procijene dostavljene radove, da identifikuju i prijave sve eventualne probleme s akademskim integritetom, kao što su plagijatorstvo, neprimjerena citiranja ili nepoštena prezentacija podataka, te da čuvaju povjerljivost informacija o radu. Od urednika se očekuje da budu odgovorni za održavanje visokih standarda akademskog integriteta u časopisu, da osiguraju pošten i transparentan proces recenzije, da istraže prijave o korištenju akademskog integriteta te preduzmu adekvatne mjere u slučaju potvrđenog kršenja integriteta, kao što su povlačenje rada, sankcionisanje autora ili recenzenata, te javno objavljivanje informacija o kršenju. Odgovornosti izdavača obuhvataju podržavanje urednika u održavanju visokih standarda akademskog integriteta, osiguranje da časopis ima jasne i transparentne smjernice o akademskom integritetu te saradnja s drugim akademskim institucijama i organizacijama u borbi protiv neetičnog ponašanja u naučnom publikovanju. Poštovanje principa akademskog integriteta od strane svih pomenutih učesnika u procesu izdavanja naučnih časopisa nužno je za održavanje povjerenja u naučnu literaturu i za osiguranje da se naučna saznanja temelje na istinitim i pouzdanim informacijama. Danas je uobičajna praksa da naučni časopisi uvode u sastav uredničkog odbora kourednika koje treba da koordiniše aktivnosti iz oblasti akademskog integriteta.

Ključne riječi: akademski integritet, naučni časopisi, etika objavljivanja, autor, recenzent, urednik, izdavač

ACADEMIC INTEGRITY IN SCIENTIFIC JOURNALS

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Abstract. Academic integrity is a key principle in publishing and editing scientific journals. Its preservation depends on the honest and ethical behavior of all participants in the publishing process, including authors, reviewers, editors and publishers, and respect for the principles of academic integrity is necessary to maintain trust in scientific literature and to ensure the progress of science. It is expected from the authors to report original research that has not been previously published or submitted for publication, to list all collaborators and sources of research funding, to properly cite the used papers, to openly present all data and research methodology, and to answer questions from reviewers and editors regarding by research. It is expected from the editor to evaluate submitted papers impartially and objectively, to identify and report any potential problems with academic integrity, such as plagiarism, inappropriate citations or dishonest presentation of data, and to maintain the confidentiality of information about the paper. From the editor, it is expected, to be responsible for maintaining high standards of academic integrity in the journal, to ensure a fair and transparent peer review process, to investigate reports of abuse of academic integrity, and to take appropriate action in the event of a confirmed breach of integrity, such as retraction of the paper, sanctioning of the author or reviewers, and public publication of information about the violation. Publisher responsibilities include supporting editors in maintaining high standards of academic integrity, ensuring that the journal has clear and transparent guidelines on academic integrity, and cooperating with other academic institutions and organizations in the fight against unethical behavior in scientific publishing. Respect for the principle of academic integrity by all mentioned participants in the process of publishing scientific journals is necessary to maintain trust in scientific literature and to ensure that scientific knowledge is based on true and reliable information. Today, it is a common practice for scientific journals to include co-editors to the composition of the editorial board, which has the task of coordinating activities in the field of academic integrity.

Key words: academic integrity, scientific journals, publication ethics, author, reviewer, editor, publisher

ЗАДОВОЉСТВО МЕДИЦИНСКИХ СЕСТАРА КОМУНИКАЦИЈОМ

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Сажетак. У професионалној пракси медицинских сестара комуникација је важна детерминатна квалитета сестринских услуга. Комуникација је фактор на основу кога корисници здравствене заштите врше субјективну процену квалитета услуга добијених у систему здравствене заштите. Циљ овог рада је испитати задовољство медицинских сестара комуникацијом као значајне детерминанте квалитета здравствене неге. Истраживање је спроведено као студија пресека у популацији медицинских сестара примарног и секундарног нивоа здравствене заштите. Узорак је био састављен од 62 испитаника. Истраживање је спроведено од 24.08.2022. до 24.09.2022. године у Здравственом центру Зајечар. За истраживање добијена је сагласност Етичког одбора Здравственог центра Зајечар. Подаци су прикупљени техником анкетања, а инструмент истраживања био је анкетни упитник, креиран од стране аутора за потребе истраживања. Статистичка обрада добијених резултата је извршена у SPSS (Statistical Package for the Social Sciences) програму за статистичку обраду података. Мера статистичке значајности $p < 0,05$. Медицинске сестре су у статистички значајној мери задовољне комуникацијом са корисницима здравствене заштите ($AS = 59.15$, $SD = 6.49$, $t = 36.60$, $df = 1$, $p < .001$). Испитаници који су задовољни материјалним примањима, односно платом ($AS = 40.25$) задовољнији су комуникацијом са корисницима здравствене заштите у односу на испитанике који нису задовољни платом ($AS = 28.95$) у статистички значајној мери ($U = 213.50$, $p = .03$). Резултати нашег истраживања слични су резултатима истраживања истраживача који су се бавили овом проблематиком. Комуникација са корисницима је значајан сегмент здравствене заштите и медицинске сестре су задовољне комуникацијом са њима. Медицинске сестре које су задовољне платом задовољније су комуникацијом са корисницима здравствене заштите, у односу на медицинске сестре које нису задовољне платом.

Кључне речи: задовољство комуникацијом, медицинска сестра, квалитет здравствене неге

SATISFACTION OF NURSES WITH COMMUNICATION

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Abstract. In the professional practice of nurses, communication is an important determinant of the quality of nursing services. Communication is a factor on the basis of which health care users make a subjective assessment of the quality of services received in the health care system. The aim of this work is to examine nurses' satisfaction with communication as a significant determinant of the quality of health care. The research was conducted as a cross-sectional study in the population of nurses at the primary and secondary levels of health care. The sample consisted of 62 respondents. The research was conducted from August 24, 2022. until 24.09.2022. in the Zaječar Health Center. The consent of the Ethics Committee of the Zaječar Health Center was obtained for the research. The data was collected using the survey technique, and the research instrument was a survey questionnaire, created by the author for the purposes of the research. The statistical processing of the obtained results was carried out in the SPSS (Statistical Package for the Social Sciences) program for statistical data processing. The measure of statistical significance is $p < 0.05$. Nurses are statistically significantly satisfied with communication with health care users ($AS = 59.15$, $SD = 6.49$, $t = 36.60$, $df = 1$, $p < .001$). Respondents who are satisfied with material income, ie salary ($AS = 40.25$) are more satisfied with communication with health care users than respondents who are not satisfied with salary ($AS = 28.95$) to a statistically significant extent ($U = 213.50$, $p = .03$). The results of our research are similar to the results of the research of researchers who have dealt with this issue. Communication with users is an important segment of health care and nurses are satisfied with communication with them. Nurses who are satisfied with their salary are more satisfied with communication with health care users than nurses who are not satisfied with their salary.

Key words: satisfaction with communication, nurse, quality of health care

UČESTALOST NASILJA NA RADNOM MJESTU KOD MEDICINSKIH SESTARA

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Sažetak. Nasilje na radu je svaki čin u kom je osoba izložena fizičkom napadu, prijetnji ili zastrašivanju na radnom mjestu, a odnosi se na incidente u kojima se radnici zloupotrebljavaju, prijeti im se ili se fizički napadaju tokom izvršavanja radnih obaveza. Zdravstveni radnici, naročito medicinske sestre, često su žrtve nasilja na radnom mjestu. Cilj rada je prikazati učestalost i vrste nasilja kojima su izložene medicinske sestre. Istraživanje je sprovedeno kod medicinskih sestara zaposlenih u JZU Dom zdravlja Prijedor, u periodu od 17.06.2023. godine do 06.07.2023. godine. U istraživanju je učestvovalo 116 ispitanika, od čega je većina ispitanika ženskog pola (81,0%). Od ukupnog broja ispitanika, 57,8% ispitanika je navelo da je na svom radnom mjestu doživjelo neki oblik nasilja, pri čemu je uočena statistički značajna razlika u odnosu na pol ($\chi^2=6,567$; $p=0,037$). Najučestaliji oblik nasilja je psihičko nasilje, koje je 44,8% ispitanika doživjelo više puta. Najmanje zastupljen oblik nasilja je seksualno nasilje, koje je jednom doživjelo 1,7% ispitanika, odnosno 0,9% ispitanika više puta. Sprovođenje mixed studija bi omogućilo dublje razumijevanje fenomena nasilja na radnom mjestu kroz subjektivna iskustva medicinskih sestara koje su žrtve nasilje, a sa druge strane bi se utvrdila prevalencija, posljedice i predložili pravovremeni mehanizmi za suočavanje sa pojavom nasilja.

Ključne riječi: sestrinstvo, nasilje, fizičko nasilje, seksualno nasilje

FREQUENCY OF VIOLENCE IN THE WORKPLACE AMONG NURSES

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Abstract. Violence at work is any act in which a person is subjected to physical attack, threat or intimidation at the workplace, and refers to incidents in which workers are abused, threatened or physically attacked while performing their work duties. Health workers, especially nurses, are often victims of workplace violence. The aim of the paper is to show the frequency and types of violence to which nurses are exposed. The research was conducted among nurses employed at the Prijedor Health Center, in the period from June 17, 2023 until July 6, 2023. One hundred and sixteen respondents participated in the research, of which the majority were female (81.0%). Out of the total number of respondents, 57.8% of respondents indicated that they had experienced some form of violence at their workplace, where a statistically significant difference was observed in relation to gender ($\chi^2 = 0.037$; $p = 6.567$). The most common form of violence is psychological harassment, which 44.8% of respondents experienced more than once. The least prevalent form of violence is sexual violence, which 1.7% of respondents experienced once, or 0.9% of respondents more than once. Conducting a mixed study would enable a deeper understanding of the phenomenon of workplace violence through the subjective experiences of nurses who are victims of violence, and on the other hand, the prevalence, consequences and timely mechanisms for dealing with the occurrence of violence would be determined.

Key words : nursing, violence, physical violence, sexual violence

AKUTNI INFARKT MIOKARDA U JU OPŠTA BOLNICA „DR MLADEN STOJANOVIĆ“ PRIJEDOR

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Sažetak. Infarkt miokarda se definiše demonstracijom nekroze ćelija miokarda zbog značajne i trajne ishemije. Svi faktori koji u potpunosti ili djelimično blokiraju protok krvi kroz koronarne krvne sudove predstavljaju potencijalni uzrok nastanka infarkta miokarda. Faktori rizika za nastanak AIM se dijele u tri grupe: nepromjenjivi, promjenjivi i ostali. U simptomatologiji bol je najčešća tegoba kod bolesnika sa infarktom miokarda. Tipično bol obuhvata središnje dijelove grudnog koša i/ili epigastrija, te se u oko 30% slučajeva širi u ruke. Bol je često povezana sa umorom, znojenjem, mučninom, povraćanjem, vrtoglavicom i strahom. Kriterijumi Evropskog registra infarkta miokarda SZO zasnovani su na kliničkoj anamnezi, nalazima na elektrokardiogramu (EKG), mjerenju enzima u krvi i postmortalnim nalazima. Svi pacijenti zahtijevaju odmah sažvakanu dozu aspirina. Pacijent bi trebao imati suplementaciju kisikom ako je zasićenost kisikom manja od 91%. U cilju rada želimo prikazati: polnu strukturu oboljelih, porodičnu anamnezu pacijenata, faktore rizika za nastanak AIM, simptome AIM i najčešće korištenu terapiju. Ispitivanje je sprovedeno kao retrospektivna-deskriptivna metoda. Do podataka smo došli iz medicinske dokumentacije JU Opšte bolnice „Dr Mladen Stojanović“ u Prijedoru, u periodu od 01.08.2023. do 01.09.2023. godine. Studijom je obuhvaćeno 70 ispitanika ženskog i muškog pola. Kriterijum za uključivanje u studiju bio je dijagnostikovani akutni infarkt miokarda (MKB10-I-21). Prije početka istraživanja, dobijena je saglasnost direktora i etičkog odbora JU Opšte bolnice „Dr Mladen Stojanović“ u Prijedoru. U istraživanju, za potrebe ovog diplomskog rada, učestvovalo je ukupno 70 ispitanika ženskog i muškog pola iz JU Opšte bolnice „Dr Mladen Stojanović“ Prijedor, sa dijagnozom akutnog infarkta miokarda (MKB-10-I-21). Na osnovu postavljenog cilja, primijenjene metodologije rada i analize dobijenih rezultata istraživanja, može se zaključiti sljedeće: češće oboljevaju osobe muškog pola, od 70 ispitanika 46 ili 64% bile su osobe muškog pola, dok je bilo 24 ili 36% osoba ženskog pola. Pozitivna porodična anamneza nije presudna u nastajanju AIM kod ispitanika, sa svega 2 ili 8% kod ispitanika ženskog i 6 ili 13% kod ispitanika muškog pola. Kao vodeći faktori rizika za nastanak AIM kod ispitanika bila je hipertenzija, 27 ispitanika. Suprotno tome, kod ispitanika zabilježeno je da je najrjeđi faktor rizika bila nepravilna ishrana, kod 5 ispitanika. Simptom koji se najčešće javljao u kliničkoj slici ispitanika bio je mučnina, kod 55 ispitanika, dok se najrjeđe javljao kratkotrajni gubitak svijesti, kod 6 ispitanika. Najčešće korišteni lijek je Controloc, kod 63 ispitanika, a najrjeđe korišteni lijek bio je Heparin, kod 4 ispitanika.

Ključne riječi: infarkt miokarda, bol

ACUTE MYOCARDIAL INFARCTION IN PUBLIC INSTITUTION GENERAL HOSPITAL „DR MLADEN STOJANOVIĆ“ PRIJEDOR

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Abstract. Myocardial infarction is defined by the demonstration of myocardial cell necrosis due to significant and sustained ischemia. All factors that completely or partially block blood flow through coronary blood vessels are a potential cause of myocardial infarction. Risk factors for the occurrence of AMI are divided into three groups: immutable, variable and others. In symptomatology, pain is the most common complaint in patients with myocardial infarction. Typically, the pain involves the central parts of the chest and/or epigastrium, and in about 30% of cases spreads to the arms. Pain is often associated with fatigue, sweating, nausea, vomiting, dizziness and fear. The WHO European Myocardial Infarction Registry criteria are based on clinical history, electrocardiogram (ECG) findings, blood enzyme measurements, and postmortem findings. All patients require an immediate chewable dose of aspirin. The patient should have supplemental oxygen if the oxygen saturation is less than 91%. For the purpose of the work, we want to show: gender structure of patients, family history of patients, risk factors for the occurrence of AMI, symptoms of AMI and the most commonly used therapy. The study was conducted as a retrospective-descriptive method. We obtained the data from the medical records of the General Hospital "Dr Mladen Stojanović" in Prijedor, in the period from 01.08.2023. until 01.09.2023. years. The study included 70 female and male respondents. The criterion for inclusion in the study was a diagnosed acute myocardial infarction (MKB-10-I-21). Based on the set goal, the applied work methodology and the analysis of the research results, the following can be concluded: men are more likely to get sick, out of 70 respondents, 46 or 64% were men, while 24 or 36% were women. A positive family history is not decisive in the occurrence of AMI in subjects, with only 2 or 8% in female subjects and 6 or 13% in male subjects. Hypertension was the leading risk factor for the occurrence of AMI in 27 respondents. On the contrary, it was noted that improper nutrition was the least common among 5 respondents. The symptom that appeared most often in the clinical picture of the subjects was nausea, in 55 subjects, while short-term loss of consciousness occurred least often, in 6 subjects. The most frequently used drug was Controloc, by 63 respondents, and the least frequently used drug was Heparin, by 4 respondents.

Key words: myocardial infarction, pain

REHABILITACIJA, FIZIČKO I MENTALNO ZDRAVLJE

REHABILITATION, PHYSICAL AND MENTAL HEALTH

DOSTUPNOST UČESTVOVANJA SPORTISTIMA SA INTELEKTUALNIM SMETNJAMA NA TAKMIČENJIMA MEĐUNARODNOG NIVOAA

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Sažetak. Sportisti sa poteškoćama u intelektualnom razvoju imaju mnogo mogućnosti da učestvuju u međunarodnim sportskim događajima. Međutim, postojanje četiri velika međunarodna sportska događaja može dovesti do zabune kod sportista i trenera zbog mogućih preklapanja sportskih disciplina i kvalifikovanosti za učešće i spriječiti ih da ostvare svoj puni potencijal. Analizirane su glavne karakteristike četiri velika međunarodna sportska događaja: Specijalna Olimpijada, Virtus svjetske igre, „Trisome Games” i Paralimpijske igre. Dizajniran je okvir sa pet parametara: Kvalifikovanost sportista, klasifikacija, Minimalna kvalifikaciona norma, broj i vrsta dostupnih sportova i tradicija (broj prethodno održanih takmičenja) značajnih za ocjenu pristupačnosti ovih takmičenja, parametri su rangirani i procijenjena je ukupna pristupačnost ovih takmičenja. Analiza je pokazala da je Specijalna olimpijada najdostupniji sportski događaj dok Paralimpijske igre imaju najviše ograničenja u smislu dostupnih sportova i klasifikacije. Specijalna Olimpijada, Svjetske igre i „Trisome Games” imaju preklapanja u određenom obimu kada je u pitanju učešće sportista sa Daunovim sindromom. Obzirom na relativno kratku istoriju međunarodnog sporta za osobe sa intelektualnim poteškoćama potrebna su dodatna istraživanja i analize kako bi se sportska takmičenja razvila u smislu dostupnosti sa jedne i kompetitivnosti sa druge strane.

Ključne riječi: sport, poteškoće u intelektualnom razvoju, kvalifikovanost, klasifikacija

PARTICIPATION ACCESSIBILITY FOR ATHLETES WITH INTELLECTUAL DISABILITIES AT THE INTERNATIONAL LEVEL SPORT COMPETITIONS

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Abstarct. Athletes with an intellectual disability (ID) have many possibilities to participate in international sports events. However, the existence of four major international sports events can lead to confusion for athletes and coaches due to the possible overlap of eligibility and sports disciplines and prevent them from making the most of their potential. We analyzed the main characteristics of four major international events: Special Olympics World Games, Trisome Games, Virtus Global Games and Paralympic Games. We designed a framework with five parameters: Athlete eligibility, classification, Minimum qualifying standards, number and type of sports available and tradition (number of previously held events) relevant to competition accessibility of these events and ranked them based on existing data in order to assess overall competition accessibility of these events. The analysis showed that the Special Olympics is the most accessible competition considering all five characteristics, while the Paralympics are restrictive in terms of available sports and classification. Special Olympics World Games, Virtus Global Games and Trisome Games overlap to a certain extent when it comes to the classification of athletes with Down syndrome. Given the relatively short history of international sports for people with intellectual disabilities, further efforts, analysis and research is necessary in order to develop sports competitions both in terms of inclusivity on the one hand and competitiveness on the other.

Key words: Sports, Intellectual disability, Eligibility, Classification

UTICAJ TERMOMINERALNE VODE NA TJELESNE-VITALNE PARAMETRE KOD OSOBA SA OBOLJENJIMA LOKOMOTORNOG SISTEMA SRC „AQUATERM“ OLOVO

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Sažetak. Prirodni ljekoviti faktori dio su prirode koja nas okružuje i koji pozitivno utiču na očuvanje zdravlja, poboljšanja zdravlja i poboljšavanja kvaliteta života. Takođe se koriste u liječenju i rehabilitaciji bolesnika, a mogu biti klimatski, morski i termalni (balneološki). Termomineralne vode imaju temperaturu višu od prosječne godišnje temperature određenog mjesta i do preko 100°C. Blagotvorno dejstvo termomineralne vode na ljudski organizam može se zahvaliti fizikalnim svojstvima vode i ljekovitim svojstvima minerala koji smanjuju spazam i bolove mišića, podstiču cirkulaciju, smanjuju krvni pritisak, djeluju protivupalno regenerativno i opuštajuće na tijelo te na taj način imaju direktan uticaj na tjelesne-vitalne parametre. Glavni cilj istraživanja je bio utvrditi da li terapija termomineralnim vodama ima uticaj na poboljšanje vitalnih funkcija ljudskog organizma. Ostali ciljevi bili su: utvrditi dob i pol ispitanika kao i uticaj ova dva parametra na ishod terapije termomineralnim vodama, te utvrditi kako se terapija termomineralnom vodom odrazila na promjene u vrijednostima pulsa, krvnog pritiska i tjelesne temperature. Istraživanje je provedeno presječenom studijom pomoću anketnog upitnika koji je imao za cilj praćenje osnovne dijagnoze ispitanika, dobi, pola, vrijednosti tjelesne temperature, pulsa i krvnog pritiska. Kroz istraživanje su rađena dva mjerenja vitalnih parametara kod 60 ispitanika. Prvo mjerenje je sprovedeno prije primjene termomineralnih voda, a potom nakon terapijske primjene kako bi se pratile eventualne promjene nastale u vrijednostima vitalnih parametara. Istraživanje je provedeno u SRC „Aquaterm“ u Olovu. Dobijeni podaci su analizirani statističkim metodama te će biti tabelarno i grafički prikazani u radu. Rezultati su pokazali da je većina ispitanika pripadala dobnoj skupini od 41 do 60 godina sa učešćem od 41,7%. Većina ispitanika je kao osnovnu dijagnozu imala diskusherniju i to u 32,4% slučajeva, dok je u 24,3% slučajeva osnovna dijagnoza bila lumbosakralni sindrom. Vrijednosti sistolnog krvnog pritiska su nakon terapije termomineralnom vodom bile niže od početnih kod 54,4% ispitanika, dok su vrijednosti dijastolnog krvnog pritiska bile niže od početnih u 43,9% slučajeva. Sporija frekvenca srčanog pulsa nakon terapije termomineralnom vodom bilježi se u 66,7% slučajeva.

Ključne riječi: hidroterapija, termalna voda, zdravlje, vitalni parametri

INFLUENCE OF THERMO-MINERAL WATER ON THE BODY-VITAL PARAMETERS IN PERSONS WITH DISEASES OF THE LOCOMOTOR SYSTEM SRC "AQUATERM" LEAD

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Abstract. Natural healing factors are part of the nature that surrounds us, and which have a positive effect on preserving health, improving health and improving the quality of life. They are also used in the treatment and rehabilitation of patients, and can be climatic, marine and thermal (balneological). Thermomineral waters have a temperature higher than the average annual temperature of a certain place and up to over 100°C. The beneficial effect of thermomineral water on the human body can be attributed to the physical properties of water and the healing properties of minerals that reduce muscle spasms and pains, stimulate circulation, reduce blood pressure, have an anti-inflammatory, regenerative and relaxing effect on the body, and thus have a direct impact on body-vital parameters. The main goal of the research was to determine whether thermomineral water therapy has an impact on improving the vital functions of the human body. Other goals were: to determine the age and gender of the subjects, as well as the influence of these two parameters on the outcome of thermomineral water therapy, and to determine how thermomineral water therapy affected changes in pulse values, blood pressure, and body temperature. The research was carried out as a cross-sectional study using a questionnaire aimed at monitoring the basic diagnosis of the subject, age, sex, body temperature, pulse and blood pressure. Through the research, two measurements of vital parameters were made in 60 subjects. The first measurement was carried out before the application of thermomineral waters, and then after the therapeutic application in order to monitor possible changes in the values of vital parameters. The research was conducted at SRC "Aquaterm" in Olovo. The obtained data were analyzed using statistical methods and will be presented tabularly and graphically in the paper. The results showed that the majority of respondents belonged to the age group of 41 to 60 years with a participation of 41.7%. The majority of respondents had discushernia as their primary diagnosis in 32.4% of cases, while in 24.3% of cases the primary diagnosis was lumbosacral syndrome. The values of systolic blood pressure after therapy with thermomineral water were lower than the initial values in 54.4% of subjects, while the values of diastolic blood pressure were lower than the initial values in 43.9% of cases. A slower heart rate after thermomineral water therapy was recorded in 66.7% of cases.

Key words: hydrotherapy, thermal water, health, vital parameters

POREĐENJE EFIKASNOSTI STANDARDNE I KOMBINOVANE RADNE TERAPIJE U POVEĆANJU POKRETLJIVOSTI RAMENA I LAKTA PACIJENATA SA REUMATOIDNIM ARTRITISOM

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Sažetak. Reumatoidni artritis je identifikovan kao najčešća hronična zapaljenska zglobna bolest. Dovodi do smanjenja profesionalnih sposobnosti i nezavisnosti u svakodnevnom aktivnostima uz prateće lične i socijalne probleme. Osnovni zadaci rehabilitacionih intervencija su kontrolisano mirovanje korišćenjem rasteretnih položaja, održavanje fiziološke dužine mišića radi prevencije deformiteta i edukacija pacijenata u vezi očuvanja energetske kapaciteta za održavanje funkcionalne nezavisnosti. Cilj istraživanja je utvrđivanje uticaja radne terapije uz dodavanje elemenata programa specijalne edukacije na povećanje pokretljivosti gornjih ekstremiteta pacijenata sa reumatoidnim artritisom. Na uzorku od 64 pacijenta, koji su u procesu rehabilitacije u Klinici za rehabilitaciju „Dr Miroslav Zotović“ u Beogradu primenjeni su somatopedski testovi za procenu motiliteta gornjih ekstremiteta - O` Connor test i Ring proba. Posle evaluacije, individualno doziran program vežbi pridodat je radnoj terapiji i sproveden u toku 12 nedelja zajedno sa radnom terapijom za eksperimentalnu grupu od 32 pacijenta, dok je kontrolna grupa bila samo u procesu radne terapije bez vežbi iz programa specijalne edukacije. Istim testovima je na kraju istraživanja urađena reevaluacija pokretljivosti u ispitivanim zglobovima pacijenata iz obe grupe. Pacijenti iz eksperimentalne grupe su ispoljili bolje rezultate u ispitivanim varijablama koje su se odnosile na okulomotornu koordinaciju pokreta na nivou lakta i ramena. Analizom dobijenih rezultata, može se zaključiti da su standardne metode radne terapije kombinovane sa elementima vežbi iz programa specijalne edukacije dovele do povećanja pokretljivosti u lakatnom i ramenom zglobu.

Ključne reči: radna terapija, reumatoidni artritis, specijalna edukacija

COMPARISON THE EFFECTIVENESS OF STANDARD AND COMBINED OCCUPATIONAL THERAPY TREATMENT IN INCREASING SHOULDER AND ELBOW MOBILITY FOR PATIENTS WITH RHEUMATOID ARTHRITIS

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Abstract. Rheumatoid arthritis has been identified as the most common chronic inflammatory joint disease. It leads to a decrease in professional skills and independence in daily activities with accompanying personal and social problems. The basic tasks of rehabilitation interventions are controlled resting by using joint's relaxed positions, maintenance of physiological muscle length in order to prevent deformities and educating patients about preserving energy capacities to maintain functional independence. The aim of the study is to determine the impact of occupational therapy with the addition of elements of the special education program to increase the mobility of the upper extremities of patients with rheumatoid arthritis. A sample of 64 patients included in rehabilitation at the Rehabilitation Clinic "Dr.Miroslav Zotovic" in Belgrade were evaluated with somatopedic tests to estimate the motility of upper extremities - O`Connor test and Ring rehearsal. After the evaluation individually dosed exercise program was added to occupational therapy and conducted for 12 weeks together with occupational therapy for an experimental group of 32 patients, while the control group was only in the process of occupational therapy without the special education training exercises. At the end of the study, the same tests were performed to re-evaluate mobility in the examined joints of patients from both groups. Patients from the experimental group performed better in the examined variables related to oculomotor coordination of elbow and shoulder motion. Based on the obtained results it can be concluded that standard methods of occupational therapy combined with the elements of exercises from the special education program leads to increased mobility in the elbow and shoulder joint.

Key words: occupational therapy, rheumatoid arthritis, special education

PRIMJENA ROBOTSKI ASISTIRANOG TRENINGA GORNJIH EKSTREMITETA U RADNOTERAPIJSKOM TRETMANU DJECE SA CEREBRALNOM PARALIZOM

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Sažetak. Posljednjih godina robotska neurorehabilitacija postaje novi modalitet u radu sa djecom sa cerebralnom paralizom (CP). Cilj istraživanja je prikazati primjenu robotski asistiranog treninga (RAT) gornjih ekstremiteta (GE) tokom radnoterapijskog tretmana djece sa CP. Istraživanje je provedeno na uzorku od 2 ispitanika (PS1 i PS2) sa dijagnozom CP. Za potrebe istraživanja koristili smo metod opservacija i nestrukturirani intervju, kao i standardizovane testove MACS (Manual Ability Classification System), GMFCS (Gross Motor Functional Classification System), BI (Bartel Index), COPM (Canadian Occupational Performance Measure), BFMF (Bimanuelna fina motorna funkcija), te objektivno mjerenje na uređaju Armeo®Spring Pediatric i GMS (gruba motorna snaga). Terapijski postupci su provedeni kroz individualni program RAT za gornje ekstremitete i program radne terapije za povećanje stepena samostalnosti i učestvovanja u aktivnostima svakodnevnog života sa elementima Bobath koncepta. Rezultati A-ROM projekcije su pokazali da PS1 i PS2 imaju bolju pokretljivost u svim segmentima oba gornja ekstremiteta. A-MOV je sa većim obimom putanje u sve tri ravni i boljom fluidnosti pokreta, više lijevo kod PS1, a desno kod PS2. Kod oba ispitanika A-GOL prikaz je verifikovao poboljšanje koordinacije, kraći omjer putanje ruke, manje odstupanje i nestabilnost u radnom prostoru. Vrijednost GMS kod PS1 (L-28/30 kg, D-26/27 kg), PS2 (L-2,5/2,5 D-2/2,5 kg). Vrijednosti BI kod PS1 inicijalni (BI-93) i finalni (BI-93) i PS2 inicijalni (BI-29) i finalni (B-I29), se nisu značajno promijenile kao i GMFCS kod PS1 (Nivo-I) i PS2 (Nivo-IV). Manipulativna sposobnost kod oba ispitanika je ostala nepromijenjena. Promjena je značajna u prosječnim vrijednostima okupacija PS1 izvođenje (p=1,0) i zadovoljstvo (p=1,2) i PS2 izvođenje (p=0,4) i zadovoljstvo (p=0,6). Rezultati ukazuju da terapija na uređaju Armeo® Spring Pediatric u kombinaciji sa terapijom po Bobath konceptu kod djece sa cerebralnom paralizom ima pozitivan učinak na poboljšanje funkcionalnih sposobnosti GE.

Ključne riječi: cerebralna paraliza, radna terapija, robotski asistiran trening, Armeo® Spring Pediatric

APPLICATION OF ROBOT-ASSISTED UPPER EXTREMITY TRAINING IN THE OCCUPATIONAL THERAPY TREATMENT OF CHILDREN WITH CEREBRAL PALSY

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Abstract. In recent years, robotic neurorehabilitation has become a new modality in working with children with cerebral palsy (CP). The aim of the research is to show the application of robot assisted training (RAT) of upper extremities (UE) during occupational therapy (OT) treatment of children with CP. The research was conducted on a sample of 2 subjects (PS1 and PS2) diagnosed with CP. For the purposes of the research, we used observations and unstructured interview, standardized tests MACS (Manual Ability Classification System), GMFCS (Gross Motor Functional Classification System), BI (Barthel Index), COPM (Canadian Occupational Performance Measure), BFMF (Bimanual Fine Motor Function) and objective measurement on Armeo®Spring Pediatric and GMS (gross motor strenght). Therapeutic procedures were carried out through individual RAT program for UE and OT program to increase the level of independence and participation in activities of daily life with elements of Bobath concept. The results of A-ROM showed that PS1 and PS2 have better mobility in all segments of both UE. A-MOV shows larger range of motion in all three planes and better fluidity of motion, more to the left in PS1 and to the right in PS2. In both subjects, A-GOL verified improvement in coordination, shorter arm path ratio, less deviation and instability in the workspace. GMS value at PS1 (L-28/30 kg D-26/27 kg), PS2 (L-2.5/2.5 D-2/2.5 kg). BI values at PS1 initial (BI-93) and final (BI-93) and PS2 initial (BI-29) and final (B-I29) did not change significantly, neither GMFCS in PS1 (Level-I) and PS2 (Level-IV). The manipulative ability of both subjects remained unchanged. The change is significant in the average values of occupational performance (p=1.0) and satisfaction (p=1.2) in PS1 and performance (p=0.4) and satisfaction (p=0.6) in PS2. The results indicate that therapy on the Armeo®Spring Pediatric in combination with Bobath concept in children with CP has positive effect on improving the functional abilities of the UE.

Key words: cerebral palsy, occupational therapy, robot assisted training, Armeo®Spring Pediatric

PRIMENA ART TERAPIJE U KLUBU LEČENIH PSIHOZA NA VOJNOMEDICINSKOJ AKADEMIJI TOKOM PANDEMIJE COVID-19

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Sažetak. Pacijenti sa psihotičnim poremećajem imaju mogućnost kontinuiranog angažovanja u okviru aktivnosti pri Klubu lečenih psihoza Vojnomedicinske akademije. Edukativno psihološke i art terapijske radionice se odvijaju jednom nedeljno, kao i povremene posete muzejima i galerijama van okvira ustanove. Obustavljanje rada Dnevne bolnice usled pojačanih epidemioloških mera na početku izbijanja pandemije uticalo je na javljanje nesigurnosti, napetosti i anksioznosti kod pacijenata, koji su za to vreme nas redovno kontaktirali ispoljavajući nadu da ćemo početi da radimo. Svesni važnosti zdravstvene i psihološke podrške organizovali smo mogućnost održavanja Kluba i pre otvaranja Dnevne bolnice, uz pojačane epidemiološke mere. Način održavanja Kluba bio je identičan onom pre izbijanja epidemije uz poštovanje setinga, u isto vreme i na istom mestu. Prepoznavanje i odgovaranje na potrebe korisnika u vidu održavanja Kluba u početnom periodu pandemije uticalo je na uspešnije prepoznavanje neprijatnih osećanja i reakcija, kao i uspešnije prevladavanje novonastalne stresne situacije u periodima pod merama potpune izolacije. Cilj ovog rada je prikaz aktivnosti Kluba tokom pandemije u formi art terapijskih radionica i psihološke edukacije kako bi pospešili proces prevazilaženja kriznih situacija. Teme na kojima smo radili doticali su se najviše pitanja doživljaja epidemiološke situacije, straha od infekcije, odnosa prema promenama koje su usledile u vidu obaveznog nošenja maski, pojačanih higijenskih mera, obrade informacija koje primaju preko medija, načinima suočavanja sa stresom. Doživljaj sigurnosti koju Klub pruža, uz art terapijske tehnike, psihoedukaciju, podsticanje socijalnog angažovanja i preuzimanje proaktivnije pozicije doprineli su očuvanju mentalne stabilnosti naših pacijenata.

Ključne reči: art terapija, psihotični poremećaj, klub

APPLICATION OF ART THERAPY IN THE CLUB FOR TREATED PSYCHOSES AT THE MILITARY MEDICAL ACADEMY DURING THE COVID-19 PANDEMIC

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Abstract. Patients with psychotic disorders have the possibility of continuous engagement within the activities of the Club of Treated Psychoses of the Military Medical Academy. Educational psychological and art therapy workshops take place once a week, as well as occasional visits to museums and galleries outside of the institution. The suspension of the work of the Day Hospital due to intensified epidemiological measures at the beginning of the outbreak of the pandemic affected the expression of insecurity, tension and anxiety among patients, who during that time regularly contacted us expressing the hope that we would start working. Aware of the importance of health and psychological support, we organized the possibility of holding the Club even before the opening of the Day Hospital, with enhanced epidemiological measures. The way the Club was held was identical to the one before the outbreak of the epidemic with respect to the setting, at the same time and in the same place. Recognizing and responding to the needs of users in the form of maintaining the Club in the initial period of the pandemic influenced the more successful recognition of unpleasant feelings and reactions, as well as the more successful overcoming of the newly created stressful situation in periods under complete isolation measures. The aim of this paper is to present the activities of the Club during the pandemic in the form of art therapy workshops and psychological education in order to promote the process of overcoming crisis situations. The topics we worked on mostly touched on the issues of experiencing the epidemiological situation, fear of infection, attitudes towards the changes that followed in the form of mandatory wearing of masks, enhanced hygiene measures, processing of information received through the media, ways of dealing with stress. The experience of safety provided by the Club, along with art therapy techniques, psychoeducation, encouraging social involvement and taking a more proactive position contributed to preserving the mental stability of our patients.

Key words: art therapy, psychotic disorder, club

POVEZANOST FIZIČKE AKTIVNOSTI, KVALITETA SPAVANJA I DEPRESIJE U GERIJATRIJI

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Sažetak. Starenje je kontinuiran proces koji teče od začeća i rođenja do kraja života. Kako svjetska populacija stari, postaje sve važnije razumjeti složene odnose između fizičke aktivnosti i kvaliteta života među starijima. Podaci Ujedinjenih nacija ukazuju na povećanje broja starijih od 2% između 1950. i 2000. godine, sa projekcijama koje procenjuju da će oni činiti 22% ukupne populacije do 2050. godine. Među kritičnim faktorima koji utiču na gerijatrijsko zdravlje su fizička aktivnost, kvalitet sna i mentalno zdravlje, posebno depresija. Ovi elementi su duboko međusobno povezani, pri čemu svaki utiče na druge na značajan način. Istovremeno, starija populacija smanjuje ukupnu fizičku aktivnost, utičući na njihov kvalitet života. Starije odrasle osobe koje su fizički neaktivne obično imaju veće potrebe za zdravstvenom zaštitom, povećane troškove i lošiji kvalitet života u poređenju sa svojim aktivnim vršnjacima. Redovna fizička aktivnost je stoga ključna za promovisanje zdravog starenja i nezavisnosti u gerijatrijskoj populaciji. Pored fizičke aktivnosti, kvalitet sna je još jedan kritični faktor koji može duboko uticati na fizičko i mentalno zdravlje starijih osoba. Pokazalo se da adekvatno učešće u vežbanju poboljšava fiziološke funkcije i odlaže proces starenja, dok takođe poboljšava emocionalnu adaptaciju starijih osoba na starenje kroz povećanu društvenu podršku. Nasuprot tome, fizička neaktivnost je povezana sa različitim negativnim zdravstvenim posledicama, uključujući depresiju, kognitivni pad i povećan rizik od smrtnosti. Starije odrasle osobe koje su fizički neaktivne češće doživljavaju poremećaje spavanja, što može dodatno pogoršati simptome depresije i doprineti smanjenom kvalitetu života. Razumijevanje ovih asocijacija može poslužiti za uvođenje intervencija za poboljšanje kvaliteta života kod starijih osoba.

Ključne riječi: osobe starije životne dobi, fizička aktivnost, san, depresija

THE RELATIONSHIP OF PHYSICAL ACTIVITY, SLEEP QUALITY AND DEPRESSION IN GERIATRIC

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Abstract. Aging is a continuous process that runs from conception and birth to the end of life. As the world's population ages, it becomes increasingly important to understand the complex relationships between physical activity and quality of life among the elderly. United Nations figures indicate an increase in the number of elderly people of more than 2% between 1950 and 2000, with projections estimating that they will make up 22% of the total population by 2050. Among the critical factors affecting geriatric health are physical activity, sleep quality, and mental health, especially depression. These elements are deeply interconnected, with each influencing the others in significant ways. At the same time, the elderly population reduces overall physical activity, affecting their quality of life. Older adults who are physically inactive tend to have greater health care needs, increased costs, and poorer quality of life compared to their active peers. Regular physical activity is therefore crucial for promoting healthy aging and independence in the geriatric population. In addition to physical activity, sleep quality is another critical factor that can profoundly affect the physical and mental health of older adults. Adequate participation in exercise has been shown to improve physiological function and delay the aging process, while also improving older adults' emotional adaptation to aging through increased social support. In contrast, physical inactivity is associated with a variety of negative health outcomes, including depression, cognitive decline, and increased risk of mortality. Older adults who are physically inactive are more likely to experience sleep disturbances, which can further worsen depression symptoms and contribute to reduced quality of life. Understanding these associations can serve to introduce interventions to improve the quality of life in the elderly.

Key words: elderly people, physical activity, sleep, depression

ПОЗИТИВАН УТИЦАЈ НАСТАВЕ ФИЗИЧКОГ И ЗДРАВСТВЕНОГ ВАСПИТАЊА НА ЗДРАВЉЕ УЧЕНИКА

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Сажетак. Период од 6 до 10 година је веома значајан за развој дјете јер они тада највише усвајају моторичке радње. Овај период је погодан за побољшање моторичких способности. Наставни предмет Физичко и здравствено васпитање се сматра мање важним од осталих наставних предмета. Томе су допринијели родитељи говорећи дјетету да то није тако важан предмет, потом учитељи који избјегавају да правилно раде час физичког и здравственог васпитања који обухвата загријавање тијела ученика, вјежбе обликовања, па потом главни и завршни дио, или једноставно тај час "замјене" за неки други "важнији" предмет. У данашњим условима живота физичка активност дјете је императив за њихов правилан психофизички развој. Међутим, упркос развијеној свијести људи о неопходности физичке активности у сваком животном добу, а нарочито у дјетињству, родитељи често занемарују те чињенице. Дјеца се слабо крећу, своје слободно вријеме проводе поред телевизора, компјутера, а 2 до 3 часа физичког васпитања колико имају седмично, није довољно да се надокнаде њихове потребе за кретањем. Због тога се у овом периоду појављују тјелесни деформитети, као што су деформитети кичме, сколиоза и кифоза, деформитети стопала и др. Да би се исправили ови деформитети потребно је много времена, рада и труда, а у већем броју случајева их је немогуће потпуно кориговати. Боље је превентивно дјеловати и правилном активношћу спријечити све могуће деформитете и аномалије. Уколико се дијете бави физичком активношћу на систематски и организован начин, ризик од тјелесних деформитета је сведен на минимум. Стога је проблем овог истраживања да ли и у којој мјери употреба и правилна примјена наставних средстава у настави физичког и здравственог васпитања утиче за правилан психо-физички развој ученика.

Кључне ријечи: деформитети, психо-физички развој, ученици, физичко и здравствено васпитање

POSITIVE INFLUENCE OF TEACHING PHYSICAL AND HEALTH EDUCATION ON STUDENTS HEALTH

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Abstract. Period from 6 to 10 years is very important for children development, because that when they mostly adopt motor actions. This period is suitable for improving motor skills. The subject Physical and Health Education is considered less important than other subjects. This was contributed by parents telling the children that it is not such an important subject, then by teachers who avoid doing the physical and health education class properly, which includes warming up the students' bodies, shaping exercises, and then the main and final part, or simply "replace" that class with another other "more important" subject. In today living conditions, children physical activity is imperative for their proper psychophysical development. However, despite people's developed awareness of the necessity of physical activity at every age, especially in childhood, parents often ignore these facts. Children do not move much, they spend their free time next to the TV, computer, and the 2 to 3 hours of physical education they have per week is not enough to compensate for their need for movement. This is why body deformities appear in this period, such as spinal deformities, scoliosis and kyphosis, foot deformities, etc. To correct these deformities requires a lot of time, work and effort, and in most cases it is impossible to correct them completely. It is better to act preventively and prevent all possible deformities and anomalies with proper activity. If the child engages in physical activity in a systematic and organized manner, the risk of physical deformities is reduced to a minimum. Therefore, the problem of this research is whether and to what extent the use and proper application of teaching aids in the teaching of physical and health education affects the proper psycho-physical development of students.

Key words: deformities, psycho-physical development, students, physical and health education

PROFESIONALNI FAKTORI BOLA U DONJEM DIJELU LEĐA ZDRAVSTVENIH PROFESIONALACA

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Sažetak. Bol u donjem dijelu leđa složno je stanje povezano sa biopsihosocijalnim faktorima koji narušavaju funkciju, učešće u društvu i lični prosperitet. Na radnim mjestima zdravstveni profesionalci su izloženi profesionalnim rizicima za razvoj bola u donjem dijelu leđa. Identifikovani faktori su dugotrajno stajanje, sjedanje, savijanje, podizanje tereta i fizički rad s pacijentima. Cilj istraživanja bio je utvrditi učestalost mehaničkih faktora na bol u donjem dijelu leđa zdravstvenih profesionalaca. Sprovedena je presječna studija u pet zdravstvenih ustanova primarnog, sekundarnog i tercijarnog nivoa u Boki Kotorskoj, Crna Gora (XII 2021. godine - VI 2022. godine). U istraživanju dobrovoljno je učestvovalo 230 ispitanika. Istraživački instrument bio je Upitnik dizajniran za ovo istraživanje. Bol u donjem dijelu leđa zastupljen je kod 83,5% zdravstvena profesionalca. Rezultati pokazuju zastupljenost bola kod 82,3% ispitanika ženskog pola i 17,7% ispitanika muškog pola. Radno je angažovano 34,9% ispitanika na sekundarnom nivou, 32,8% na primarnom i 32,3% na tercijarnom nivou, prosječne starosne dobi 41,6±12,99 godine. Analiza fizičkog napora na poslu pokazala je statistički značajnu razliku $p=0,0001$, jer 35,9% ispitanika uglavnom stoje/hodaju, ali ne nose težak teret, 22,9% sjedi, 14,1% stoji, 8,3% stoje i nose težak teret, 7,8% puno hodaju, penju se uz stepenice i nose težak teret, 5,7% često se saginju, a 4,2% teško fizički rade. Pretežnom stajanjem/hodanjem, bez nošenja teškog tereta izloženo je 52,4% ispitanika primarnog nivoa, 37,1% tercijarnog i 19,4% sekundarnog nivoa. Teškom fizičkom radu, nošenju/podizanju tereta izloženo je 7,5% ispitanika sekundarnog nivoa. Čestom saginjanju pri radnim zadacima izloženo je 4,8% ispitanika tercijarnog nivoa. Ispitanici primarnog nivoa nisu izloženi teškom fizičkom radu. Profesionalni faktori su različiti i znatno zastupljeni u bolu donjeg dijela leđa zdravstvenih profesionalaca u ispitivanim ustanovama. Najzastupljeniji su fizički zahtjevne uloge, podizanje i nošenje teškog tereta, radni položaji i pokreti. Potrebno je sprovesti preventivne mjere na radnom mjestu za manju izloženost ovim faktorima.

Ključne riječi: zdravstveni radnici, bol u donjem dijelu leđa, mehanički faktori, učestalost

PROFESSIONAL FACTORS OF LOW BACK PAIN IN HEALTHCARE PROFESSIONALS

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Abstract. Low back pain is a complex condition associated with biopsychosocial factors that impair function, social participation, and personal prosperity. In the workplace, health professionals are exposed to occupational risks for the development of lower back pain. Identified factors are prolonged standing, sitting, bending, lifting loads and physical work with patients. The aim of the research was to determine the frequency of mechanical factors in the lower back pain of health professionals. A cross-sectional study was conducted in five primary, secondary and tertiary health institutions in Boka Kotorska, Montenegro (XII 2021 - VI 2022). The research instrument was a Questionnaire designed for this research. Pain in the lower back is present in 83.5% of health professionals. The results show the prevalence of pain in 82.3% of female respondents and 17.7% of male respondents. 34.9% of respondents were employed at the secondary level, 32.8% at the primary level and 32.3% at the tertiary level, with an average age of 41.6 ± 12.99 years. The analysis of physical effort at work showed a statistically significant difference $p=0.0001$, because 35.9% of respondents mostly stand/walk, but do not carry heavy loads, 22.9% sit, 14.1% stand, 8.3% stand and carry heavy loads, 7.8% walk a lot, climb stairs and carry heavy loads, 5.7% often bend down, and 4.2% do hard physical work. Predominantly standing/walking, without carrying a heavy load, was exposed to 52.4% of respondents at the primary level, 37.1% at the tertiary level and 19.4% at the secondary level. 7.5% of secondary level respondents were exposed to hard physical work, carrying/lifting loads. 4.8% of respondents at the tertiary level were exposed to frequent bending during work tasks. Primary level respondents are not exposed to hard physical work. Professional factors are different and significantly represented in the pain of the lower part of the back of health professionals in the investigated institutions. The most common are physically demanding roles, lifting and carrying heavy loads, working positions and movements. It is necessary to implement preventive measures at the workplace to reduce exposure to these factors.

Key words: healthcare workers, low back pain, mechanical factors, frequency

PROBLEMI SA RUKAMA, VRATOM I/ILI RAMENIMA KOD UNIVERZITETSKIH NASTAVNIKA I ZAPOSLENIH U JAVNOJ UPRAVI U SLOVENIJI

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Sažetak. Rad sa računarom često je povezan sa sjedenjem i problemima u rukama, vratu i/ili ramenima, koji se najčešće javljaju kod kancelarijskih radnika. Tegobe ruku, vrata i/ili ramena su mišićno-koštani poremećaji koji nisu rezultat akutne ozljede ili sistemske bolesti. Svrha rada je utvrditi prevalenciju problema s rukama, vratom i/ili ramenima među zaposlenima u Sloveniji, koji uglavnom rade za računarom. Maastrichtski upitnik gornjih ekstremiteta korišten je za analizu tipičnih problema sa rukama, vratom i/ili ramenima u online alatu 1KA. Učesnici su bili univerzitetški nastavnici i službenici javne uprave koji rade sa računarima. Ispitujući prevalenciju problema sa rukama, vratom i/ili ramenima među univerzitetškim nastavnicima (N=152) i zaposlenima u javnoj upravi (N=92), prevalencija je niža kod kancelarijskih radnika nego kod univerzitetških nastavnika. Najveća prevalencija među univerzitetškim nastavnicima je u vratu (57%), ramenima (49%) i zglobovima (31%), dok je među službenicima javne uprave prevalencija u vratu i ramenima 48%, a u zglobovima 31%. Prevalencija tegoba gornjeg dijela ruku, vrata i/ili ramena u slovenskim istraživanjima slična je rezultatima stranih studija i češća je na desnoj strani tijela. Dokazi o povezanosti između pojedinačnih faktora rizika i problema sa rukama, vratom i/ili ramenima nisu dovoljno jaki. Poremećaji mišićno-koštanog sistema povezani sa previše rada na kompjuteru predstavljaju javnozdravstveni problem. Uprkos propisima o radu sa ekranom, slovenačke kompanije pokazuju mnoga odstupanja u dizajnu radnog okruženja. Rezultati našeg istraživanja pokazuju na potrebu poduzimanja mjera za smanjenje problema povezanih s kompjuterom i očuvanje zdravlja. Longitudinalna studija bi bila potrebna kako bi se dalje istražili faktori rizika i prevalencija problema sa rukama, vratom i/ili ramenima.

Ključne riječi: rad sa računarom, tegobe ruku, vrat i/ili rame, faktori rizika, ergonomija

COMPLAINTS OF ARM, NECK AND/OR SHOULDER AMONG UNIVERSITY TEACHERS AND PUBLIC ADMINISTRATION EMPLOYEES IN SLOVENIA

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Abstract. Working at a computer is often associated with sedentariness and complaints of the arm, neck and/or shoulder, which occur most frequently in office workers. Complaints of the arm, neck and/or shoulder are musculoskeletal disorders that are not result of an acute injury or systemic disease. The aim of this paper is to determine prevalence of complaints of arm, neck and/or shoulder among Slovenian employees who work predominantly at a computer. The Maastricht Upper Extremity Questionnaire was used to analyse typical complaints of the arm, neck and/or shoulder in the online tool 1KA. The participants were university teachers and public sector employees who work with computers. Examining the prevalence of complaints of the arm, neck and/or shoulder disorders among university teachers (N=152) and public administration employees (N=92), the prevalence of complaints of the arm, neck and/or shoulder is lower in office workers than in university teachers. The highest prevalence among university teachers is in the neck (57%), shoulders (49%) and wrists (31%), while the prevalence among civil servants is 48% in the neck and shoulders and 31% in the wrists. The prevalence of the complaints of the arms, neck and/or shoulders upper in Slovenian studies is similar to results from foreign studies and is more common on the right side of the body. The evidence for an association between individual risk factors and the complaints of the arms, neck and/or shoulders is not strong enough. Musculoskeletal disorders related to working too much at a computer are a public health problem. Despite the regulations on working with a display screen, Slovenian companies show many deviations in the design of the working environment. The results of our research demonstrate the need for measures to reduce computer-related complaints and maintain health. A longitudinal study would be needed to further investigate the risk factors and prevalence of complaints of the arm, neck and/or shoulder.

Key words: working with a computer, complaints of the arm, neck and/or shoulder, risk factors, ergonomics

EMPATIJA STUDENATA ZDRAVSTVENIH NAUKA

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Sažetak. Empatija je jedan je od značajnijih elemenata dobrog odnosa budućeg zdravstvenog radnika i pacijenta. To je sposobnost uživanja u emocionalna stanja druge osobe i razumijevanje njenog položaja na osnovu percipirane ili zamišljene situacije u kojoj se ta osoba nalazi. Cilj rada je ispitati prisustvo empatije kod studenata zdravstvenih nauka. Prospektivna studija je obuhvatila 99 ispitanika, studenata JU Visoka medicinska škola Prijedor. Istraživanje je sprovedeno u periodu od oktobra do decembra 2023. Za potrebe istraživanja korišten je sociodemografski upitnik i Toronto Empathy Questionnaire (TEQ). Za analizu dobijenih podataka korištena je deskriptivna statistika, Mann Whitney i Kruskal-Wallis test. Uzorak su činili ispitanici 4 studijska programa prosječne životne dobi 21,59 (± 3.985) godina, od kojih je 77 ispitanica ženskog pola (77,8 %). Najveći broj ispitanika u uzorku su bili studenti druge godine (33,3%) i studijskog programa fizioterapije (54,6%). Statističkim pokazateljima je utvrđena visoka statistički značajna razlika u odnosu na pol i stepen empatije više kod osoba ženskog pola ($Z=3,308$ $p=0,001$). Ne postoji statistički značajna razlika u odnosu na stepen empatije i godinu studiranja ispitanika ($p=0,526$). Među studentima zdravstvenih nauka, studentice 2. godine fizioterapije su pokazale najveći procenat empatije.

Ključne riječi: empatija, TEQ, studenti zdravstvenih nauka

EMPATHY OF HEALTH SCIENCES STUDENTS

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Abstract. Empathy is one of the most important elements of a good relationship between future healthcare workers and patients. Empathy is the ability to empathize with the emotional states of another person and understand their position based on the perceived or imagined situation in which that person is. The aim of the study is to examine the presence of empathy in students of health sciences. The prospective study included 99 respondents, students at College of Health Sciences. The research was conducted from October to December 2023. For the purposes of the research sociodemographic questionnaire and the Toronto Empathy Questionnaire (TEQ) was used. Descriptive statistics, Mann Whitney and Kruskal-Wallis test were used to analyze the obtained data. The sample consisted of respondents from 4 study programs, average age of 21.59 (± 3.985). Out of total number 77 respondents were female (77.8%). The largest number of respondents in the sample were 2nd year students (33.3%) and physiotherapy study program students (54.6%). Statistical indicators revealed a high statistically significant difference in relation to gender and the level of empathy was higher in females ($Z=3.308$, $p=0.001$). There is no statistically significant difference in relation to the level of empathy and the year of study of the respondents ($p=0.526$). Among health sciences students, 2nd year female physiotherapy students showed the highest percentage of empathy.

Key words: empathy, TEQ, students of health sciences

PROCJENA RIZIKA OD PADA KOD KORISNIKA DOMA ZA STARIJA LICA PRIJEDOR

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Sažetak. Pad se definiše kao iznenadna, nenamjerna promjena položaja tijela, koja osobu dovodi na niži nivo, predmet, pod ili zemlju. Približno 30% osoba starijih od 65 godina padnu bar jednom u toku godine, a kod polovine padovi se ponavljaju i više puta tokom godine. Sa povećanjem godina povećava se i ozbiljnost komplikacija usled pada, stepen funkcionalnog oštećenja i nivo invaliditeta. Odgovornost za pad pripisuje se mnogim faktorima rizika. Nakon padova kod starijih osoba veoma često dolazi do značajnog smanjenja svakodnevnih aktivnosti zbog straha od ponovnog padanja. Zbog složenosti njihove prirode, od ključnog je značaja da se revidiraju konceptualni i metodološki okviri za razumijevanje i predviđanje pada u populaciji starih osoba. Ciljevi istraživanja: procijeniti rizik za pad kod korisnika doma za stara lica, utvrditi učestalost padova i najčešće faktore rizika za pad. Istraživanjem je obuvačen 31 ispitanik, stariji od 65 godina, korisnik JU Dom za stara lica Prijedor. Prilikom ispitivanja korišten je upitnik koji je sadržavao sociodemografska pitanja, kao i pitanja o fizičkom i zdravstvenom stanju, korištenju pomagala za hod, vidi i sluh. Za procjenu rizika od pada korišteni su standardizovani testovi: Ustani i hodaj test i Izdržaj na jednoj nozi. Na osnovu analize pojedinih faktora izdvojili smo da je oštećenje vida značajan faktor rizika od pada i da između ovih kategorija postoji negativna korelacija (stepen pouzdanosti 95%, nivo značajnosti sig=0,221). Sa druge strane godine starosti nisu značajan faktor rizika i između ovih kategorija postoji pozitivna korelacija (stepen pouzdanosti 95%, nivo značajnosti sig=0,204). Pozitivna istorija padova i poremećaj ravnoteže su značajni faktori rizika za pad. Zbog složenosti prirode padova, od ključnog je značaja da se revidiraju konceptualni i metodološki okviri za razumijevanje i predviđanje pada u populaciji starih osoba.

Ključne riječi: padovi, osobe starije životne dobi, faktori rizika

ASSESSMENT OF THE RISK OF FALLING AMONG USERS OF THE HOME FOR THE ELDERLY PRIJEDOR

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Abstract. A fall is defined as a sudden, unintentional change in body position, which brings a person to a lower level, object, floor or ground. Approximately 30% of people over the age of 65 fall at least once a year, and half of them have repeated falls several times a year. With increasing age, the severity of fall complications, the degree of functional impairment and the level of disability also increase. Responsibility for the decline has been attributed to many risk factors. After falls in elderly people, there is often a significant reduction in daily activities due to fear of falling again. Goals of the paper are to assess the risk of falls among the users of the home for the elderly, to determine the frequency of falls and the most common risk factors for falls. The research involved 31 respondents, over 65 years old, users of the Home for the Elderly Prijedor. During the examination, a questionnaire was used that contained sociodemographic questions, as well as questions about physical and health status, use of aids for walking, seeing and hearing. To assess the risk of falling, standardized tests were used: Timed Up and Go test and The Single Leg Stanced test. Based on the analysis of individual factors, we found that visual impairment is a significant fall risk factor and that there is a negative correlation between these categories (confidence level 95%, significance level sig=0.221). On the other hand, age is not a significant risk factor and there is a positive correlation between these categories (confidence level 95%, significance level sig=0.204). Due to the complex nature of falls, it is crucial to revise the conceptual and methodological frameworks for understanding and predicting falls in the elderly population.

Key words: falls, elderly people, risk factors

PROMOCIJA ZDRAVLJA I PREVENCIJA BOLESTI

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Sažetak. Medicinske sestre danas zauzimaju najveći broj radnika u zdravstvenom sistemu. U posljednje vrijeme u promociji zdravlja veliki fokus se stavlja na prevenciju razvijanja oboljenja te medicinske sestre su uveliko pronašle svoju ulogu i značaj u ovom segmentu zdravstvene njege. Prvi susret i najveći dio pacijentove komunikacije se upravo i odvija sa medicinskim sestrama, pri čemu one trebaju da kroz educiranje motivišu pacijenta na odvikavanje od štetnih navika i izbjegavanje faktora rizika kako bi se prevenirala određena bolest. Preventivna zdravstvena zaštita informiše populaciju, promoviše zdrav stil života i osigurava rano liječenje bolesti. U industriji, pojava reforme zdravstvene zaštite i povećani broj pojedinaca koji pate od hroničnih stanja doveli su do pojačane uloge medicinskih sestara u prevenciji bolesti. Ciljevi ovog rada jesu da se prikaže uloga medicinske sestre u promociji zdravlja i prevenciji bolesti, te da se analizira dostupnost promotivnog materijala za rad medicinskih sestara u tom segmentu. Rad predstavlja opazajnu studiju te je za prikupljanje podataka korišten kritički pregled dostupne literature na web stranicama PubMed, Medline itd. Iz dobivenih rezultata se uočava potreba za medicinskim sestrama u zdravstvenom odgoju, kao i važnost uloge koju obnašaju. Može se zaključiti da je danas medicinska sestra neizostavan dio u zdravstvenom timu te da se njena uloga ne ogleda samo u njezi i brizi za oboljele, već da uloga medicinske sestre započinje već kod zdravog stanovništva u segmentu prevencije bolesti.

Ključne riječi: promocija, prevencija, medicinska sestra

HEALTH PROMOTION AND DISEASE PREVENTION

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Abstract. Today, nurses occupy the largest number of workers in the health care system. Recently, in the promotion of health, a great focus has been placed on the prevention of the development of diseases, and nurses have greatly found their role and importance in this segment of health care. The first meeting and most of the patient's communication takes place with the nurses, where they should, through education, motivate the patient to get rid of harmful habits and avoid risk factors in order to prevent a certain disease. Preventive health care informs the population, promotes a healthy lifestyle and ensures early treatment of diseases. In industry, the advent of health care reform and the increased number of individuals suffering from chronic conditions have led to an increased role for nurses in disease prevention. This paper aims to show the role of nurses in health promotion and disease prevention and to analyze the availability of promotional material for the work of nurses in that segment. The paper represents an observational study, and a critical review of the available literature on the websites of PubMed, Medline, etc. was used to collect data. The obtained results show the need for nurses in health education, as well as the importance of the role they play. It can be concluded that today the nurse is an indispensable part of the health team and that her role is not only reflected in the care for the sick, but that the role of the nurse begins already with the healthy population in the disease prevention segment.

Key words: promotion, prevention, nurse

PRAKSA UTEMELJENA NA DOKAZIMA

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Sažetak. Praksa utemeljena na dokazima (EBP) predstavlja pristup praksi, koja koristi rezultate istraživanja kao temelj odluka, aktivnosti i interakcija s klijentom, te po principima EBP svaka odluka u zdravstvenoj praksi mora biti utemeljena na dokazima iz kliničkih istraživanja. Znanstveni dokaz sam po sebi nije dostatan za donošenje konačne odluke o postupku/aktivnosti iz područja prakse već se povezuje s obilježjima bolesnika (psihološko i emocionalno stanje bolesnika, obitelj, društveni status, i sl.) njegovim željama i stavovima te profesionalnoj izvrsnosti medicinskog osoblja. Praksa utemeljena na dokazima daje prednost empirijskom razmišljanju da je iskustvo temeljni izvor spoznaje (svih znanja i pojmova), za razliku od racionalističkog razmišljanja koji tvrde da su ljudska osjetila ograničena te da se objektivna stvarnost može spoznati samo mišljenjem (razumom, umom i intelektom). Postoje brojni benefiti EBP: unapređuje medicinu i medicinsko osoblje, poboljšava proces donošenja odluka, povećava učinkovitost oporavka pacijenata, omogućava bolje razumijevanje rizika iza određenih tretmana, pacijentima daje aktivniju ulogu u planiranju svoje skrbi, pruža informatičko znanje, upoznavanje tehnologije, znanje o istraživanju, pruža edukaciju osoblja i bolesnika, te rast u svom poslu, omogućava autonomiju. Cilj rada je prikazati prednosti EBP kako bi medicinsko osoblje uvidjelo važnost prakse utemeljene na dokazima. Analiza mogućnosti objavljivanja EB radova u regionu omogućiti će najbolji uvid u razvoj EB u regionu. Kao izvor koristiti će se SCIMAGO baza podataka. Ovo istraživanje prikazuje kritički naučni pregled medicinskih časopisa dostupnih u elektronskom obliku. Iz dobivenih rezultata moguće je vidjeti koliko je važno primijeniti evidence based u kliničku praksu, u svrhu unapređenja struke, olakšanja rada medicinskom osoblju i uključivanja pacijenta u planiranje vlastitog liječenja, uz poštovanje njegovih osobnih prioriteta. Također, Evidence based bi se mogao bolje razvijati ako bi u regionu imali više indeksiranih časopisa. Zaključak ovog rada je da praksa utemeljena na dokazima prikazuje jedan od najboljih načina rada, kako bi se ukinuo tradicionalni način pojedinih postupaka i uveli noviteti u posao koji su naučno dokazani, a sve u svrhu napretka struke, olakšanja rada i povoljnijeg ishoda liječenja.

Ključne riječi: praksa utemeljena na dokazima, istraživanje, medicinsko osoblje, autonomija

EVIDENCE BASED PRACTICE

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Abstract. Evidence-based practice (EBP) represents an approach to practice, which uses research results as the basis for decisions, activities and interactions with the client, and according to the principles of EBP, every decision in health practice must be based on evidence from clinical research. Scientific evidence in itself is not sufficient for making a final decision on a procedure/activity in the field of practice, but is connected to the characteristics of the patient (psychological and emotional state of the patient, family, social status, etc.), his wishes and attitudes, and the professional excellence of the medical staff. Evidence-based practice gives preference to empirical thinking that experience is the fundamental source of knowledge (of all knowledge and concepts), in contrast to rationalist thinking that claims that human senses are limited and that objective reality can only be known through thought (reason, mind and intellect). There are numerous benefits of EBP: it improves medicine and medical staff, improves the decision-making process, increases the efficiency of patient recovery, enables a better understanding of the risks behind certain treatments, gives patients a more active role in planning their care, provides IT knowledge, familiarization with technology, knowledge about research, provides the education of staff and patients, and growth in one's job, enables autonomy. The aim of the paper is to show the benefits of EBP so that the medical staff can see the importance of evidence-based practice. Analysis of the possibility of publishing EB works in the region will provide the best insight into the development of EB in the region. The SCIMAGO database will be used as a source. This research presents a critical scientific review of medical journals available in electronic form. From the obtained results, it is possible to see how important it is to apply evidence-based clinical practice, for the purpose of improving the profession, facilitating the work of the medical staff and involving the patient in planning his own treatment, while respecting his personal priorities. Also, Evidence-based could develop better if there were more indexed journals in the region. The conclusion of this paper is that practice based on evidence shows one of the best ways of working, in order to abolish the traditional way of certain procedures and introduce novelties into the work that are scientifically proven, all for the purpose of advancing the profession, facilitating work and a more favorable outcome of treatment.

Key words: evidence-based practice, research, medical staff, autonomy

RADNO TERAPIJSKI PROCES KOD BULOZNE EPIDERMOLIZE

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Sažetak. Bulozna epidermoliza (EB) pripada skupini rijetkih, genetskih bolesti za koje je karakteristična izuzetna osjetljivost kože, a u nekih oblika i sluznice. Progresivna priroda ove bolesti narušava život oboljele osobe te postupno dovodi i do invaliditeta. To je nasljedna bolest koja uzrokuje jaku osjetljivost kože. Na najmanji pritisak ili trenje može doći do pojave bolnih mjehura i rana, a komplikacije mogu nastati i na sluznicama (oči, usta, probavni sustav). U radu je prikazan utjecaj EB na kvalitetu života, povezanost okupacija i zdravlja, radno terapijski (RT) proces kod EB, sustav podrške i međusektorska suradnja. Naglasak je stavljen na progresiju, problematiku i utjecaj bolesti na svakodnevni život oboljelih, od rođenja do prelaska u odraslu dob. Sukladno tome prikazane su RT intervencije, čiji je primarni cilj prevladavanje prepreka i osnaživanje okupacijske participacije u svrhu unaprjeđenja kvalitete života osoba s EB i osnaživanja njihove participacije u aktivnostima svakodnevnog života. Rad pruža uvid u kompleksnost ovog područja, uzimajući u obzir istraživanja na području RT prakse i kvalitete života oboljelih od EB.

Ključne riječi: bulozna epidermoliza, radno terapijski proces, kvaliteta života, okupacijska participacija

OCCUPATIONAL THERAPY PROCESS IN EPIDERMOLYSIS BULLOSA

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Abstract. Epidermolysis bullosa (EB) belongs to a group of rare, genetic diseases characterized by extreme sensitivity of the skin and in some forms of the mucous membrane. The progressive nature of this disease disrupts the life of the affected person and gradually leads to disability. It is a hereditary disease in which the slightest pressure or friction can cause painful blisters and wounds. Complications can also occur on the mucous membranes of the eyes, mouth, and digestive system. This paper presents an overview of the impact of EB on quality of life, the connection between occupations and health, the occupational therapy (OT) process for persons with EB, and the role of support systems and intersectoral cooperation. Emphasis is placed on the progression, challenges, and impact of the disease on the daily life of persons with EB from birth to adulthood. Accordingly, OT interventions are also presented, the primary goal of which is to overcome obstacles and strengthen occupational participation as a means for improving the quality of life of persons with EB. This paper provides insight into the complexity of this area, taking into account research in the field of OT practice and the quality of life of persons with EB.

Key words: epidermolysis bullosa, occupational therapy process, quality of life, occupational participation

ANALIZA ZNANSTVENIH DOKAZA RADNO TERAPIJSKIH INTERVENCIJA U OSOBA SA SARKOPENIJOM

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Sažetak. Starenje svjetske populacije donosi brojne izazove u radu s osobama starije životne dobi. Sarkopenija je stanje koje nastupa prije onesposobljenja, vrlo je važan gerijatrijski sindrom te predstavlja novo područje intervencija. Europska grupa za sarkopeniju u osoba starije životne dobi (European Working Group on Sarcopenia in Older People (EWGSOP)) predložila je definiciju koja glasi: „Sarkopenija je progresivni generalizirani poremećaj koji je povezan s povećanim rizikom od štetnih ishoda uključujući padove, prijelome, tjelesni invaliditet i smrt“. Ovaj sustavni pregled literature imao je za cilj procijeniti razinu znanstvenih dokaza učinkovitih radno terapijskih intervencija kod sarkopenije za potrebe projekta „Biomarkeri kao prediktori sarkopenije uz analizu funkcionalnosti i kvalitete života osoba starije životne dobi“ (BPSA). Korišten je sustavni pregled baze podataka: Ovid, Medline, CINAHL i PsycInfo. Ukupno 291 rad koji je uključivao ključne riječi: radna terapija, sarkopenija i osobe starije životne dobi. Nakon analize radova nije pronađen niti jedan rad koji je uključivao radno terapijsku intervenciju u osoba sa sarkopenijom. Navedeno pokazuje veliku istraživačku prazninu koja se nastoji popuniti kroz projekt BPSA.

Ključne riječi: radna terapija, sarkopenija, osobe starije životne dobi, praksa temeljena na dokazima

ANALYSIS OF THE SCIENTIFIC EVIDENCE FOR OCCUPATIONAL THERAPY INTERVENTIONS FOR PEOPLE WITH SARCOPENIA

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Abstract. Aging of the world's population brings numerous challenges for those working with elderly people. Sarcopenia is very important geriatric syndrome that occurs prior to disability and represents a new area of intervention. The European Working Group on Sarcopenia in Older People (EWGSOP) defines sarcopenia as „a progressive generalized disorder associated with an increased risk of adverse outcomes including falls, fractures, physical disability and death. This paper presents a systematic review of the literature aimed to assess the level of scientific evidence for effective occupational therapy interventions for persons with sarcopenia. This review was conducted within the project "Biomarkers as predictors of sarcopenia with analysis of functionality and quality of life of elderly people" (BPSA). A systematic review of Ovid, Medline, CINAHL and PsycInfo databases was conducted. Using the keywords occupational therapy, sarcopenia and elderly people, a total of 291 papers were included in the review: Analysis of the included papers revealed that not a single paper examined occupational therapy intervention for people with sarcopenia. This result indicates a large research gap that the BPSA project aims to fill.

Key words: occupational therapy, sarcopenia, elderly people, evidence-based practice

DA LI U REHABILITACIONOM TRETMANU PACIJENTA, RADNOJ TERAPIJI, AKTIVNOST ILI FUNKCIJA, TREBA DA BUDU PRIMARNI CILJEVI – PRIKAZ SLUČAJA

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Sažetak. Ljudi imaju urođenu potrebu da se nečim bave, aktivno i nezavisno provode svoje vrijeme kroz samozbrinjavanje, produktivnost i slobodno vrijeme. Kada nastupi bolest, naročito u neurološkom aspektu, pacijentu se oduzima mogućnost nezavisnog življenja. Radna terapija kao profesija koja kroz aktivnosti svakodnevnog života stvara uslove za veće učestvovanje i kojoj je glavni cilj samostalnost koja se postiže kroz aktivnost, može pacijentu pružiti mogućnost nezavisnosti kroz određene adaptacije. Cilj rada jeste prikazati efekat radne terapije na oporavak pacijenta nakon operativnog liječenja prednje discektomije nivoa C5-C6 sa implantacijom cage-a i prikazati njene specifične oblike (funkcija i okupacija). Pacijentica M.B. u dobi od 70 godina starosti primljena na bolničku rehabilitaciju u trajanju od 21 dan, sa radnom dijagnozom M50.0 Prolapsus disci intervertebralis cervicalis cum myelopathia. Pacijentica prema planu i programu liječenja, u radnoj terapiji dobija funkcionalnu terapiju koja nije pokazala značajan napredak, a zatim biva zamjenjena radnom terapijom kojoj je akcenat na provođenje aktivnosti, koja se pokazala kao izuzetno dobra u kratkom vremenskom periodu. Materijal i metode korišteni u radu podrazumjevali su: funkcionalnu procjenu stanja korištenjem standardizovanih mjernih instrumenata – Barthel index i početnu, kontrolnu i završnu radnotepraijsku procjenu (intervju i posmatranje). Ovaj slučaj upućuje na važnost provođenja radne terapije kojoj akcenat treba da bude na aktivnostima, a ne na funkciji. Funkcija je primarna u kineziterapijskom tretmanu liječenja, za razliku od radne terapije gdje ta funkcija treba da bude primjenjena.

Ključne riječi: aktivnost, funkcionalna radna terapija, Prolapsus disci intervertebralis cervicalis cum myelopathia, hemiparesis I sin

ACTIVITY OR FUNCTION, WHAT SHOULD BE PRIMARY GOAL IN PATIENT REHABILITATION TREATMENT - CASE REPORT

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Abstract. People have an innate need to do something, actively and independently spend their time through self-care, productivity and free time. When an illness occurs, especially in the neurological aspect, the patient is deprived of the possibility of independent living. Occupational therapy, as a profession that creates conditions for greater participation through activities of daily life and whose main goal is independence achieved through activity, can provide the patient with the possibility of independence through certain adaptations. The main goal of case report is to show the effect of occupational therapy on the recovery of the patient after surgical treatment of anterior discectomy at the C5-C6 level with cage implantation and to show its specific forms (function and occupation). Patient M.B. at the age of 70, admitted to hospital rehabilitation for 21 days, with a working diagnosis of M500 Prolapsus disci intervertebralis cervicalis cum myelopathy. According to the treatment plan and program, the patient receives functional therapy in occupational therapy, which did not show significant progress, and then it is replaced by occupational therapy with an emphasis on carrying out activities, which proved to be extremely good in a short period of time. The material and methods used in the work included: functional assessment of the condition using standardized measuring instruments - Barthel index and initial, control and final occupational assessment (interview and observation). This case points to the importance of conducting occupational therapy, which should focus on activities, not on function. Function is primary in kinesitherapy treatment, unlike occupational therapy where this function should be applied.

Key words: activity, functional occupational therapy, Prolapsus disci intervertebralis cervicalis cum myelopathy, hemiparesis I sin.

**SPOLJAŠNJI FAKTORI I
PREVENCIJA RIZIKA PO
ZDRAVLJE LJUDI**

**EXTERNAL FACTORS AND
PREVENTION OF RISKS TO
HUMAN HEALTH**

ULOGA MIKROBIOLOŠKIH KULTURA U PROIZVODIMA NAMENJENIM LJUDSKOJ UPOTREBI

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Sažetak. U radu je dat revijalni prikaz uloge mikrobioloških kultura u proizvodima namenjenim ljudskoj upotrebi, sa posebnim osvrtom na primenu bakterija i kvasaca kao radnih mikroorganizma. Mikroorganizmi imaju dugu istoriju primene u proizvodnji hrane, posebno uzimajući u obzir proizvode alkoholne i kiselo-mlečne fermentacije. Razvojem tehnologije, raniji spontani mikrobiološki procesi postaju kontrolisani i vođeni radi formiranja prihvatljivih fizičko-hemijskih i organoleptičkih karakteristika prehrambenih proizvoda. Primenom mikroorganizama pod određenim uslovima sredine može se uticati na konzistenciju proizvoda, kiselost, miris, ukus, boju, ali i na dužinu roka trajanja, odnosno održivost proizvoda. Tradicionalno spremeni sirevi, kiselo-mlečni proizvodi, fermentisane kobasice, pivo, vina i drugi proizvodi, zahvaljujući komercijalnim mikrobiološkim kulturama mogu biti proizvedeni u velikim šaržama i sa ustaljenim kvalitetom. Mikrobnna biomasa ili ekstrahovani proteini mogu biti dodaci ishrani ili sastojci hrane. Takođe treba dodati i ulogu mikroorganizama u proizvodnji sirovina kao što su enzimi, prehrambene arome i mirisne materije koji imaju nezamenivu ulogu u prehrambenoj industriji i proizvodnji predmeta opšte upotrebe. Posebnu pažnju zavređuju i probiotički mikroorganizmi u hrani, dodacima ishrani, kozmetičkim i farmaceutskim proizvodima i njihova dobrobit za ljudsko zdravlje, prevenciju i tretiranje kardiovaskularnih bolesti, gojaznosti, dijabetisa tipa 2 i karcinoma.

Ključne riječi: hrana, mikrobiološke kulture, probiotici, farmaceutski proizvodi

THE ROLE OF MICROBIAL CULTURE IN PRODUCTS INTENDED FOR HUMAN USE

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Abstract. The paper presents a review of the role of microbiological cultures in products intended for human use, with special reference to the use of bacteria and yeasts as working microorganisms. Microorganisms have a long history of application in food production, especially considering the products of alcoholic and lactic fermentation. With the development of technology, earlier spontaneous microbiological processes become controlled and guided to form acceptable physicochemical and organoleptic characteristics of food products. The application of microorganisms under certain environmental conditions can affect the consistency of the product, acidity, smell, taste, and color, but also the length of the shelf life, i.e. the sustainability of the product. Traditionally prepared cheeses, sour milk products, fermented sausages, beer, wines, and other products thanks to commercial microbiological cultures can be produced in many batches and with established quality. Microbial biomass or extracted proteins can be dietary supplements or food ingredients. It should also be added the role of microorganisms in the production of raw materials such as enzymes, food flavors, and fragrances that have an interchangeable role in the food industry and the production of general-use items. Probiotic microorganisms in food, dietary supplements, cosmetic and pharmaceutical products and their benefits for human health, prevention, and treatment of cardiovascular disease, obesity, type 2 diabetes, and cancer deserve special attention.

Key words: food, microbiological culture, probiotics, pharmaceutical products

ZDRAVSTVENE KORISTI PRIMENE PROBIOTIKA KOD LJUDI SA METABOLIČKIM SINDROMOM

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Sažetak. Metabolički sindrom je kompleksno stanje koje uključuje dislipidemiju, poremećenu homeostazu glukoze, povišen krvni pritisak, prekomjernu težinu, abdominalnu gojaznost i/ili insulinsku rezistenciju, i samim tim povećava rizik od srčanih oboljenja, moždanog udara i dijabetesa tipa 2. Posljedica je energetskeg disbalansa koji pogoduje akumulaciji masti u tkivima, dok molekularne promjene uključuju smanjen oksidativni kapacitet mitohondrija, oštećeno ćelijsko redoks stanje i izmijenjenu signalizaciju insulina koja dovodi do poremećenog transporta glukoze i lipolize. Probiotici su prepoznati kao moćni sastojci u ishrani sa višestrukim funkcijama za unapređenje zdravlja, zajedno sa njihovom sposobnošću da pomažu u borbi protiv specifičnih bolesti. U ovom radu je dat pregled efekata i mehanizama djelovanja probiotika (uglavnom *Lactobacillus* sojeva) u prevenciji i pri terapiji metaboličkog sindroma. Bez obzira na pokazane koristi primjene *Lactobacillus*, još uvijek nije razjašnjen tačan mehanizam djelovanja, ali je najvjerovatnije povezan sa smanjenjem stresa endoplazmatskog retikuluma i potisnutom aktivacijom makrofaga, što dovodi do povećane osjetljivosti na insulin. Analiza devet kliničkih studija, od kojih je šest randomiziranih, pokazala je da primjena probiotika kod pacijenata sa metaboličkim sindromom u nekim slučajevima dovodi do poboljšanja indeksa tjelesne mase, krvnog pritiska, metabolizma glukoze i lipidnog profila. Probiotici su također imali pozitivan efekat na inflamatorne biomarkere kao što su rastvorljivi molekul adhezije vaskularnih ćelija-1, interleukin-6, faktor nekroze tumora-alfa, faktor rasta vaskularnog endotela i trombomodulin. Iako upotreba probiotika može dovesti do diskretnog poboljšanja nekih kliničkih karakteristika i smanjenja inflamatornih biomarkera, čini se da su ovi korisni efekti marginalni u poređenju sa efektima terapije lekovima i zdravim načinom života. Takođe, i poremećaj mikrobiote creva utiče na različite faktore rizika za metabolički sindrom. Stoga je održavanje zdrave mikrobiote važno kao i obnavljanje poremećene mikrobiote.

Ključne reči: probiotici, *Lactobacillus*, metabolički sindrom

HEALTH BENEFITS OF TAKING PROBIOTICS IN PEOPLE WITH METABOLIC SYNDROME

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Abstract. Metabolic syndrome is a complex condition that includes dyslipidemia, impaired glucose homeostasis, elevated blood pressure, overweight, abdominal obesity, and/or insulin resistance, increasing the risk of heart disease, stroke, and type 2 diabetes. It is the result of an energy imbalance that favors the accumulation of fat in tissues. Molecular changes include reduced mitochondrial oxidative capacity, damaged cellular redox state, and altered insulin signaling leading to impaired glucose transport and lipolysis. Probiotics are recognized as powerful dietary components with numerous health-promoting functions that can also help fight certain diseases. This paper provides an overview of the effects and mechanisms of action of probiotics (mainly *Lactobacillus* strains) in the prevention and treatment of metabolic syndrome. Despite the observed benefits of *Lactobacillus* administration, the exact mechanism of action is not yet clear, but it is most likely related to the reduction of endoplasmic reticulum stress and suppressed macrophage activation, leading to increased insulin sensitivity. An analysis of nine clinical trials, six of which were randomized, has shown that in some cases the use of probiotics in patients with metabolic syndrome leads to an improvement in body mass index, blood pressure, glucose metabolism, and lipid profile. Probiotics also had a positive effect on inflammatory biomarkers such as soluble vascular cell adhesion molecule-1, interleukin-6, tumor necrosis factor-alpha, vascular endothelial growth factor, and thrombomodulin. Although the use of probiotics may lead to a discrete improvement in some clinical features and a reduction in inflammatory biomarkers, these beneficial effects appear to be marginal compared to the effects of drug therapy and a healthy lifestyle. Disruption of the gut microbiota also influences various risk factors for metabolic syndrome. Thus, maintaining a healthy microbiota is as important as restoring a disturbed microbiota.

Key words: probiotics, *Lactobacillus*, metabolic syndrome

PRIMENA ESENCIJALNIH ULJA PROTIV MIKROORGANIZAMA

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Sažetak. Prema definiciji Međunarodne organizacije za standardizaciju, esencijalno ulje je „proizvod dobijen od prirodne sirovine biljnog porekla destilacijom vodenom parom, mehaničkim procesima iz epikarpa citrusa ili suvom destilacijom, nakon odvajanja vodene faze, ako postoji, fizičkim procesima“. Esencijalna ulja sadrže sekundarne metabolite biljaka koji su sposobni da zaustave ili uspore rast mikroorganizama. Iako su začinske i medicinske biljke oduvek imale zapaženu primenu u narodnoj medicini, proizvodnja i primena esencijalnih ulja u novije vreme dobija značajnu ulogu u proizvodnji prehrambenih, kozmetičkih i farmaceutskih proizvoda. Sve veća otpornost mikroorganizama na sintetičke lekove je globalni problem i nameće potrebu ispitivanja i pronalaženja novih efikasnih supstanci širokog spektra dejstva protiv patogenih mikroorganizama. Zavisno od prisutnih hemijskih komponenata, esencijalna ulja imaju različite mehanizme dejstva prema mikroorganizmima, te su eksperimentalna ispitivanja pouzdan dokaz njihove aktivnosti prema mikroorganizmima. Česti su rezultati ispitivanja i efekata esencijalnog ulja na određene sojeve mikroorganizama, bez potpune identifikacije u esencijalnom ulju prisustnih hemijskih komponeneta. U ovom radu je dat pregled ispitivanja vezanih za dejstvo različitih esencijalnih ulja na patogene mikroorganizme i mikroorganizme koji su od značaja za mikrobiološki kvalitet prehrambenih proizvoda.

Ključne riječi: esencijalna ulja, patogeni mikroorganizmi, mikrobiološki kvalitet hrane, mikroorganizmi

THE APPLICATION OF ESSENTIAL OILS AGAINST MICROORGANISMS

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Abstract. According to the definition of the International Organization for Standardization, essential oil is „a product obtained from a natural raw material of plant origin, by steam distillation, by mechanical processes, from the epicarp of citrus fruits, or by dry distillation, after separation of the aqueous phase – if any – by physical processes“. Essential oils contain secondary plant metabolites with microbistatic or microbicidal activity on microbial growth. Although herbs and medicinal plants always had a notable use in folk medicine, recently the production and application of essential oils have gained a significant role in the production of foodstuffs, and cosmetic and pharmaceutical products. The increasing resistance of microorganisms to synthetic drugs is a global problem. It imposes the need to test and find new effective substances of a wide spectrum of action against pathogenic microorganisms. Depending on the chemical components present, essential oils have different mechanisms of action against pathogenic microorganisms, and only experimental tests are reliable proof of their activity against microorganisms. There are frequent results of tests and effects of essential oil on certain strains of microorganisms without complete identification of the chemical components present in the essential oil. This paper provides an overview of tests related to the effect of different essential oils on pathogenic microorganisms and microorganisms that are important for the microbiological quality of food.

Key words: essential oils, pathogenic microorganisms, microbiological food quality

ANTIBAKTERIJSKA AKTIVNOST TINKTURE *ALLIUM URSINUM* – NA PATOGENE IZOLOVANE IZ HRANE

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Sažetak. *Allium ursinum*-sremuš je biljka koja osim što se koristi u kulinarstvu ima i ljekovita svojstva. Zahvaljujući hemijskom sastavu može se koristiti kao antimikrobno sredstvo, za detoksikaciju tijela te u prevenciji i liječenju kardiovaskularnih bolesti. Listovi ove biljke sadrže komponente na bazi sumpora, fenole, vitamin C, hlorofile i karotenoide. *Allium ursinum* je bogat izvor željeza i adenoza i posjeduje jako baktericidno, antiparazitsko i antimikrobno djelovanje. Kao prirodni antibiotik koji sadrži velike količine vitamina C poželjan je u terapijama kod ateroskleroze i skorbuta, a zbog velike količine sumpora posjeduje sposobnost zaštite ćelija od infekcije i upala. Posljednjih godina je proučavana antibakterijska aktivnost ekstrakta *Allium ursinum*, ali izvještaji o antibakterijskoj aktivnosti tinkture *Allium ursinum* pripremljene na tradicionalan način u Republici Srpskoj protiv nekih patogena izolovanih iz hrane je još uvijek neispitana. Cilj ovog ispitivanja bio je procijeniti antibakterijsku aktivnost tinkture *Allium ursinum* pripremljene na tradicionalan način protiv dva izolata *Salmonella enteritis*, jednog izolata *Salmonella* sp. i tri izolata *Staphylococcus aureus*, patogenima koji se prenose hranom. Antibakterijska aktivnost prema odabranim patogenima izolovanim iz hrane je ispitana disk difuzionom metodom. Rezultati ispitivanja su pokazali da tinktura *Allium ursinum* pripremljena na tradicionalan način pokazuje određena antibakterijska svojstva u odnosu na ispitivane patogene.

Ključne riječi: *Allium ursinum*, antimikrobno djelovanje, patogene bakterije

ANTIBACTERIAL ACTIVITY OF *ALLIUM URSINUM* TINCTURE ON PATHOGENS ISOLATED FROM FOOD

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Abstract. *Allium ursinum* - wild garlic is a plant used not only in culinary applications but also valued for its medicinal properties. Due to its chemical composition, it can be used as an antimicrobial agent, for detoxification, and in the prevention and treatment of cardiovascular diseases. The leaves of this plant contain sulfur-based compounds, phenols, vitamin C, chlorophyll, and carotenoids. *Allium ursinum* L is a rich source of iron and adenosine and exhibits potent bactericidal, antiparasitic, and antimicrobial effects. As a natural antibiotic containing high levels of vitamin C, it is beneficial in therapies for atherosclerosis and scurvy. Additionally, due to its high sulfur content, it possesses the ability to protect cells from infection and inflammation. In recent years, the antibacterial activity of *Allium ursinum* extract has been studied. However, reports on the antibacterial activity of *Allium ursinum* tincture prepared in a traditional manner in the Republic of Srpska against certain food-isolated pathogens are still limited. The aim of this study was to assess the antibacterial activity of traditionally prepared *Allium ursinum* tincture against two isolates of *Salmonella enteritis*, one isolate of *Salmonella spp.*, and three isolates of *Staphylococcus aureus*, pathogens commonly transmitted through food. The antibacterial activity against selected food-isolated pathogens was evaluated using the disk diffusion method. The study results showed that the traditionally prepared *Allium ursinum* tincture exhibits certain antibacterial properties against the tested pathogens.

Key words: *Allium ursinum*, antimicrobial activity, pathogenic bacteria

VJEŠTAČKI UZGOJENO MESO – MIŠLJENJE POTROŠAČA O ODRŽIVOSTI PROIZVODNJE

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Sažetak. Kapaciteti za proizvodnju mesa u svijetu su ograničeni. Svijet se približava tački kada će biti nemoguće dalje povećanje broja stoke radi proizvodnje proteina. U cilju rješavanja ovog problema, traže se novi izvori proteina (vještačko meso, proteini insekata, biljni proteini i drugo). Posljednjih godina ostvareni su vidni rezultati u istraživanju vještački uzgojenog mesa. Provedena istraživanja ukazala su na nejasan stav potrošača prema mogućnosti da konzumiraju ovu vrstu hrane. U Bosni i Hercegovini provedeno je veoma malo istraživanja u ovoj oblasti, zbog čega su autori odlučili da ispituju stavove potrošača o održivosti proizvodnje vještački uzgojenog mesa i konzumiranju gotovih proizvoda izrađenih od njega. U radu je provedena onlajn anketa tokom koje su prikupljeni podaci o stavovima potrošača o proizvodnji i upotrebi uzgojenog mesa. Ispitanicima je ponuđen upitnik sa 7 pitanja. Prilikom analize podataka primijenjena je deskriptivna statistička analiza (srednja vrijednost, standardna devijacija, Kruskal Wallis test) i Pirsonov koeficijent korelacije. U tu svrhu korišćen je softverski paket SPSS. Razlike na $p < 0,05$ smatrane su značajnim. Više od trećine ispitanika je izjavilo da uzgoj stoke i mesna industrija uzrokuju etičke (38,46%), odnosno ekološke probleme (30,77%). Sa druge strane, polovina ispitanika (53,85%) nije imala jasno opredjeljenje o uticaju proizvodnje uzgojenog mesa na životnu sredinu. 38,46% ispitanika smatra da proizvodnja uzgojenog mesa negativno utiče na tradicionalni način proizvodnje mesa, dok polovina ispitanika smatra da je uzgojeno meso neprirodan proizvod (46,15%), da nije ukusno kao prirodno meso (38,46%) i da njegova proizvodnja udaljava ljude od prirode (38,46%). Da je proizvodnja uzgojenog mesa održiv proces smatra 7,69% ispitanika, 15,38% da je to neodrživ proces, dok 38,46% ispitanika nema jasan stav po ovom pitanju. Rezultati ankete su pokazali da potrošači u Bosni i Hercegovini još uvijek nemaju dovoljno informacija o uzgojenom mesu, ali su svjesni da je neophodno tražiti nove izvore proteina, uključujući i uzgojeno meso.

Ključne riječi: Vještačko meso, Uzgojeno meso, Održivost proizvodnje, Potrošači, Bosna i Hercegovina

CULTURED MEAT - CONSUMER OPINIONS ON THE SUSTAINABILITY OF PRODUCTION

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Abstract. Capacity for meat production in the world is limited. The world is approaching a point where it will be impossible to further increase livestock numbers for protein production. In order to solve this problem, new sources of protein are being sought (artificial meat, insect proteins, vegetable proteins and others). In recent years, visible results have been achieved in the research of cultured meat. Earlier researches indicated a vague attitude of consumers towards the possibility of consuming this type of food. In Bosnia and Herzegovina, very little research has been conducted in this area, which is why the authors decided to examine consumer attitudes about the sustainability of the production of cultured meat and the consumption of finished products made from it. In the paper, an online survey was conducted during which data was collected on consumer attitudes about the production and use of cultured meat. Respondents were offered a questionnaire with 7 questions. During data analysis, descriptive statistical analysis (mean value, standard deviation, Kruskal Wallis test) and Pearson's correlation coefficient were applied. For this purpose, the software package SPSS was used. Differences at $p < 0.05$ were considered significant. More than a third of respondents stated that livestock breeding and the meat industry cause ethical (38.46%) and environmental problems (30.77%). On the other hand, half of the respondents (53.85%) did not have a clear decision about the impact of the production of cultured meat on the environment. 38.46% of respondents believe that the production of cultured meat negatively affects the traditional way of meat production, while half of the respondents believe that cultured meat is an unnatural product (46.15%), that it is not as tasty as natural meat (38.46%) and that its production distances people from nature (38.46%). 7.69% of the respondents believe that the production of cultured meat is a sustainable process, 15.38% that it is an unsustainable process, while 38.46% of the respondents do not have a clear opinion on this issue. The results of the survey showed that consumers in Bosnia and Herzegovina still do not have enough information about cultured meat, but they are aware that it is necessary to look for new sources of protein, including cultured meat.

Key words: Artificial meat, Cultured meat, Sustainability of production, Consumers, Bosnia and Herzegovina

PRIMJENA KONCENTRATA PROTEINA TIKVE U PROIZVODNJI JOGURTA NA BAZI OVSA

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Sažetak. Ovas i novi proizvodi na bazi ovsa, kao dio zdrave ishrane, postaju sve popularniji na tržištu funkcionalne hrane. Shodno tome, koristeći zdravstvene prednosti probiotske kulture sa prebiotskim beta-glukanom ovsa, cilj rada je bio da se pokuša razviti receptura za proizvodnju senzorski i reološki prihvatljivog fermentisanog nemliječnog proizvoda na bazi ovsa, uz primjenu koncentrata proteina tikve (P), ekstrakta arome vanilije (V) i blendirane višnje (CH). Suspenzija ovsenih mekinja je fermentisana probiotskom starter kulturom koja je sadržavala *Bifidobacterium (nu-trish® BB-12®)*. Baza ovsa je termički obrađena 10 minuta na 80°C i ohlađena na 37°C za proces inokulacije. Uz kontrolni uzorak (C) koji je bez dodataka, proizvedeni su i uzorci sa kombinacijama: 1%P, 1%P+1%V, 1%P+3%CH, 1%P+5%CH i 1%P+7%CH. Pri praćenju pada pH vrijednosti fermentacija je trajala 6 sati. Tokom 1., 7. i 14. dana skladištenja, svim uzorcima mjerena je aktivna kiselost, viskozitet i sinereza dok je senzorsku procjenu (ukus, konzistenciju, boju, miris i izgled površine) ocijenila panel grupa od 3 člana. 1. dana čuvanja proveden je i test prihvatljivosti i poželjnosti verbalnom hedonističkom skalom od strane 32 ispitanika koji prethodno nisu testirani, a koji su ocjenama od 1 do 9 izrazili opšti utisak o istraživanim proizvodima. Rezultati su pokazali da su izmjerene vrijednosti pH nakon završene fermentacije nešto niže za uzorke sa dodatkom višnje (4,36-4,47) u poređenju sa preostala 3 uzorka (4,69-4,76), te se takav trend zadržao i tokom skladištenja. Takođe, tokom cjelokupnog vremena skladištenja, sinereza je bila statistički značajno viša, a viskozitet niži ($p<0,05$) kod uzoraka sa dodatkom višnje (1%P+3%CH, 1%P+5%CH i 1%P+7%CH) u odnosu na ostale uzorke (C, P i CH). Najbolje senzorske ocjene, svih proizvedenih uzoraka jogurta, bile su nakon 1. dana ocjenjivanja, s tim da je grupa uzoraka sa višnjom dobila nešto niže ocjene zbog lošije ocijenjenih parametara ukusa i konzistencije. 14. dana skladištenja uzorci C, P i CH su zadržali maksimalne ocjene, dok su kod uzoraka sa višnjom uočene pahuljaste nakupine na površini, što je ukazivalo na znake kvarenja i ovi uzorci su eliminisani iz dalje analize.

Ključne riječi: jogurt na bazi ovsa, receptura, fermentacija, trajnost

APPLICATION OF PUMPKIN PROTEIN CONCENTRATE IN THE PRODUCTION OF YOGURT BASED ON OATS

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Abstract. Oats and new oat-based products, as part of a healthy diet, are becoming increasingly popular in the market of functional food. Accordingly, using the health benefits of probiotic culture with oat prebiotic beta-glucan, the aim of the paper was to try to develop a recipe for the production of a sensory and rheologically acceptable fermented non-dairy product based on oats, with the use of pumpkin protein concentrate (P), vanilla flavor extract (V) and blended cherries (CH). The oat bran suspension was fermented with a probiotic starter culture containing *Bifidobacterium (nu-trish® BB-12®)*. The oat base was heat treated for 10 minutes at 80°C and cooled to 37°C for the inoculation process. In addition to the control sample (C) without supplements, samples were also produced with the following combinations: 1%P, 1%P+1%V, 1%P+3%CH, 1%P+5%CH and 1%P+ 7%CH. When monitoring the drop in pH value, the fermentation lasted 6 hours. During the 1st, 7th and 14th days of storage, active acidity, viscosity and syneresis were measured for all samples, while the sensory evaluation (taste, consistency, color, smell and appearance of the surface) was evaluated by a panel group of 3 members. On the 1st storage day, a test of acceptability and desirability was conducted using a verbal hedonic scale by 32 subjects who had not been tested previously, and who expressed a general impression of the researched products with grades from 1 to 9. The results showed that the measured pH values after fermentation were slightly lower for the samples with the addition of cherries (4.36-4.47) compared to the remaining 3 samples (4.69-4.76), and this trend was maintained during storage. Also, during the entire storage time, syneresis was statistically significantly higher, and viscosity was lower ($p<0.05$) in samples with added cherry (1%P+3%CH, 1%P+5%CH and 1%P+ 7%CH) compared to other samples (C, P and CH). The best sensory evaluations, of all produced yogurt samples, were after the 1st day of evaluation, with the fact that the group of samples with cherry received slightly lower evaluations due to the poorly evaluated parameters of taste and consistency. On the 14th storage day, samples C, P and CH maintained their maximum scores, while samples with cherry showed fluffy accumulations on the surface, which indicated signs of spoilage and these samples were eliminated from further analysis.

Key words: oat-based yogurt, recipe, fermentation, durability

UTICAJ DODATKA PROTEINA GRAŠKA I MEDA NA OSNOVNA FIZIČKOHEMIJSKA I REOLOŠKA SVOJSTVA OVSENOG JOGURTA

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Sažetak. Posljednjih nekoliko godina znatno je porastao broj osoba koji su se okrenuli vegetarijanstvu i veganstvu, te je sve veća potražnja za proizvodima biljnog porijekla. Kao zamjena za mliječne proizvode našle su se žitarice kao sirovine za proizvodnju nemliječnih alternativa. Zbog svog nutritivnog sastava i pozitivnog uticaja na zdravlje, kao i prirodnog odsustva glutena, ovas predstavlja zanimljivu sirovinu za razvoj inovativnih funkcionalnih namirnica, uključujući i fermentisane proizvode. Svrha ovog rada imala je za cilj da ispita uticaj dodatka komecijalnog koncentrata proteina graška (PP) i meda (H) na osnovna fizičkohemijska i reološka svojstva ovsenog jogurta. U laboratorijskim uslovima, uz direktnu inokulaciju starter kulture, pripremljena su četiri uzorka na bazi ovsenog mlijeka: prvi uzorak je kontrolni (Con-bez dodataka), drugi uzorak je sa dodatkom 1%PP, treći uzorak je sa 1%PP+1%H i četvrti uzorak je sa 1%PP+3%H. Kvalitet i održivost jogurta praćeni su promjenama pH i sinereze 1., 7. i 14. dana, a promjene viskoziteta 1. i 14.dana. Kod svih uzoraka tokom perioda skladištenja nije uočena značajnija promjena u pH vrijednosti, ali su uzorci sa dodatkom meda (1%PP+1%H, 1%PP+3%H) s jedne strane, imali statistički značajno niže vrijednosti ($p<0,05$) u odnosu na Con uzorak i uzorak sa 1%PP, s druge strane. Takođe, reološka mjerenja su pokazala da je utvrđen niži viskozitet i veća sinereza kod uzoraka sa medom u odnosu na preostala dva uzorka ($p<0,05$).

Ključne riječi: ovсени jogurt, protein graška, med, reološki parametri

THE INFLUENCE OF THE PEA PROTEIN ADDITION AND HONEY ON THE BASIC PHYSICOCHEMICAL AND RHEOLOGICAL PROPERTIES OF OAT YOGURT

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Abstract. In the last few years, the number of people who have turned to vegetarianism and veganism has increased significantly, and the demand for plant-based products is also increasing. As a substitute for dairy products, cereals were found as raw materials for the production of non-dairy alternatives. Due to its nutritional composition and positive impact on health, as well as the natural absence of gluten, oats represent an interesting raw material for the development of innovative functional foods, including fermented products. The purpose of this paper was to examine the influence of the addition of commercial pea protein concentrate (PP) and honey (H) on the basic physicochemical and rheological properties of oat yogurt. In laboratory conditions, with direct inoculation of the starter culture, four oat milk-based samples were prepared: the first sample is the control (Con-without additives), the second sample is with the addition of 1%PP, the third sample is with 1%PP+1%H and the fourth sample is with 1%PP+3%H. The quality and sustainability of yogurt were monitored by changes in pH and syneresis on days 1, 7 and 14, and changes in viscosity on days 1 and 14. No significant change in pH value was observed in all samples during the storage period, but samples with the addition of honey (1%PP+1%H, 1%PP+3%H) on the one hand, had statistically significantly lower values ($p<0.05$) compared to the Con sample and the sample with 1%PP, on the other hand. Also, rheological measurements showed that lower viscosity and greater syneresis were found in samples with honey compared to the other two samples ($p<0.05$).

Key words: oat yogurt, pea protein, honey, rheological parameters

UTICAJ ZAMJENE DIJELA PŠENIČNOG BRAŠNA PROSOM NA PROTEINE GLIJADINE

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Sažetak. Pseudožitarice, iako ne spadaju u grupu žitarica (njihovo sjeme podsjeća na žitarice) su bogate hranljivim materijama. Zbog toga, uključivanje ovih bezglutenskih žitarica u bezglutensku ishranu, ne samo da utiče na raznolikost, već poboljšava i njen nutritivni kvalitet. U pseudožitarice spada i proso. Uzimajući u obzir da je svakim danom broj osoba koje su alergične na gluten u porastu, cilj ovog rada je bio da se nakon zamjene dijela pšeničnog brašna u mafinama sa prosom, ispita kako to utiče na proteine glutena-glijadine. Mafini su napravljeni od 100% pšeničnog brašna, zatim 75% pšeničnog brašna uz dodatak 25% prosa, zatim 50% pšeničnog brašna uz dodatak 50% prosa i 25% pšeničnog brašna uz dodatak 75% prosa. Uzorci su skladišteni 0, 2 i 4 sedmice. Nakon toga, glijadini su ekstrahovani 70% (v/v) etanolom. Razdvajanje proteina glijadina vršeno je visoko-pritisnom tečnom hromatografijom obrnutih faza (RP-HPLC). Nakon razdvajanja, određena je ukupna količina proteina, količina proteina unutar frakcija, kao i njihova relativna koncentracija. Na osnovu dobijenih rezultata, najveća količina proteina izdvojena je iz uzoraka mafina koji su napravljeni od 100% pšeničnog brašna i koji su skladišteni 0 sedmica ($X_{av}=19,00$), a najmanja količina proteina izdvojena je iz uzoraka mafina koji su napravljeni od 25% pšeničnog brašna uz dodatak 75% prosa i koji su skladišteni 4 sedmice ($X_{av}=16,00$). Tokom skladištenja u trajanju od 0, 2 i 4 sedmice u uzorcima koji su napravljeni od 100% pšeničnog brašna i 50% pšeničnog brašna uz dodatak 50% prosa, izdvojena količina proteina se smanjuje, a zatim povećava, kod uzoraka koji su napravljeni od 75% pšeničnog brašna uz dodatak 25% prosa, količina proteina se povećava, a zatim smanjuje, a kod uzoraka koji su napravljeni od 25% pšeničnog brašna uz dodatak 75% prosa, količina proteina se smanjuje.

Ključne riječi: pseudožitarice, proso, mafini, glijadini, RP-HPLC

THE EFFECT OF REPLACING PART OF WHEAT FLOUR WITH MILLET ON GLIADIN PROTEINS

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Abstract. Pseudocereals, although they do not belong to the group of cereals (their seeds resemble cereals), are rich in nutrients. Therefore, the inclusion of these gluten-free grains in the gluten-free diet not only affects the variety, but also improves its nutritional quality. Pseudocereals also include millet. Taking into account that every day the number of people who are allergic to gluten is increasing, the aim of this work was to examine how it affects the gluten-gliadin proteins after replacing part of wheat flour in muffins with millet. Muffins are made from 100% wheat flour, then 75% wheat flour with the addition of 25% millet, then 50% wheat flour with the addition of 50% millet and 25% wheat flour with the addition of 75% millet. The samples were stored for 0, 2 and 4 weeks. Afterwards, gliadins were extracted with 70% (v/v) ethanol. Gliadin proteins separation was performed by reversed-phase high pressure liquid chromatography (RP-HPLC). After separation, the total amount of protein, the amount of protein within the fractions and their relative concentration were determined. Based on the obtained results, the highest amount of protein was extracted from muffin samples made from 100% wheat flour and stored for 0 weeks ($X_{av}=19.00$), and the lowest amount of proteins was extracted from muffin samples made from 25% wheat flour with the addition of 75% millet and which stored for 4 weeks ($X_{av}=16.00$). During storage for 0, 2 and 4 weeks, in samples made from 100% wheat flour and 50% wheat flour with the addition of 50% millet, the amount of protein decreases and then increases, in samples made from 75% of wheat flour with the addition of 25% millet, the amount of protein increases and then decreases and in samples made from 25% wheat flour with the addition of 75% millet, the amount of protein decreases.

Key words: pseudocereals, millet, muffins, gliadins, RP-HPLC

**НУТРИТИВНЕ ОСОБИНЕ ЦЈЕЛОВИТИХ СТРНИХ ЖИТА И
ПОТЕНЦИЈАЛНА КОРИСТ ЗА УНАПРЕЂЕЊЕ ЗДРАВЉА ЉУДИ**

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Сажетак. Стрна жита важна су сировина у исхрани људи и домаћих животиња, битан елемент плодореда и дио пољопривредне стратегије многих земаља. У последње вријеме је порасло интересовање за потенцијалном здравственом користи које цјеловита жита и њихове супстанце могу обезбиједити особама које их конзумирају. Циљ овог прегледног рада је да се истакну особености цјеловитих стрних жита које им обезбјеђују значајну улогу у побољшању здравственог стања људи. У срху прикупљања релевантних чињеница, аутори су извршили увид у водеће базе (ScienceDirect, Scopus, Google Scholar, PubMed) и анализирали истраживачке радове бројних аутора. Неки производи од жита представљени су као извори фолата, гвожђа, тиамина, ниацина и дијететских влакана. Конзумација производа од цјеловитих жита обезбјеђују квалитетнију исхрану, у којој је храна богата протеинима, липидима, витамином Б (укључујући тиамин, ниацин, рибофлавин), витамином Е и минералима (калцијум, магнезијум, калијум, фосфор, гвожђе и натријум). Посебно је важна биорасположивост мангана због његове улоге у метаболичким процесима као и функционисању нервног, имунолошког и репродуктивног система. Исхрана богата дијететским влаканима која потичу из цјеловитих жита резултира смањењем ризика смртности од свих узрока кардиоваскуларних болести, атеросклеротичних кардиоваскуларних болести, исхемијског можданог удара, доприноси снижењу садржаја холестерола, појаве дијабетеса типа 2 и смањењу броја гојазних особа. Дијететска влакна и резистентни скроб обезбјеђују супстрат за микробну ферментацију дебелог цријева, што доводи до производње краткотанчаних масних киселина, које су директан извор енергије за епител дебелог цријева и утичу на осјетљивост јетре на инсулин. У раду је детаљно приказан утицај конзумирања цјеловите пшенице, јечма, овса, ражи и спелте на људско здравље.

Кључне ријечи: Пшеница, јечам, оvas, раж, алтернативна жита, биоактивне супстанце, утицај на здравље људи

NUTRITIONAL PROPERTIES OF WHOLE SMALL GRAINS AND POTENTIAL BENEFITS FOR IMPROVING HUMAN HEALTH

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Abstract. Small grains are an important raw material in the diet of humans and domestic animals, an important element of crop rotation and part of the agricultural strategy in many countries. Recently, there has been an increased interest in the potential health benefits of whole grains and their substances that can be provided to consumers. The aim of this review is to highlight the characteristics of whole small grains playing a significant role in improving human health. In order to collect the relevant facts, the authors consulted the leading databases (ScienceDirect, Scopus, Google Scholar, PubMed) and analysed the research works of numerous authors. Some grain products are sources of folate, iron, thiamine, niacin and dietary fibre. Consumption of whole grain products provides a better quality diet, rich in proteins, lipids, vitamin B (including thiamine, niacin, riboflavin), vitamin E and minerals (calcium, magnesium, potassium, phosphorus, iron and sodium). The bioavailability of manganese is particularly important due to its role in metabolic processes as well as the functioning of the nervous, immune and reproductive systems. A diet rich in dietary fibres originating from whole grains results in a reduction in the risk of mortality from all causes of cardiovascular disease, atherosclerotic cardiovascular disease, ischemic stroke, contributes to a reduction in cholesterol content, the occurrence of type 2 diabetes and a reduction in the number of obese people. Dietary fibre and resistant starch provide a substrate for colon microbial fermentation, which leads to the production of short-chain fatty acids, which are a direct source of energy for the colonic epithelium and affect the sensitivity of the liver to insulin. The paper describes in detail the impact of consumption of whole wheat, barley, oats, rye and spelt on human health.

Key words: Wheat, Barley, Oats, Rye, Alternative Grains, Bioactive Substances, Impact on Human Health

DOKUMENTOVANE INFORMACIJE U SISTEMU INTEGRISANOG UPRAVLJANJA

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Sažetak. Implementacija nekoliko odvojenih standarda sistema upravljanja podrazumijeva dupliranje mnogih aktivnosti, uključujući i obimnu dokumentaciju. Dosadašnja praksa je pokazala da zaposleni imaju neprijateljski stav prema tome. Integriranje više sistema upravljanja u integrirani sistem upravljanja (IMS) donosi različite prednosti. Integriranje utiče na skraćanje potrebnog vremena, opterećenje zaposlenih, efikasnije korišćenje tehničkih i finansijskih resursa, te isključuje potrebu za višestrukim prikupljanjem i obradom informacija, vodi ka smanjenju obima dokumentacije i sistem oslobađa od nepotrebne birokratizacije. S obzirom na obim ulaznih i izlaznih elemenata tokom razvoja i primjene IMS, te obimnu dokumentaciju, značajnu podršku organizaciji mogu pružiti informaciono-komunikacione tehnologije (ICT). Razvoj informaciono-komunikacionih tehnologija prije svega jeftinih hardvera, baza i softvera omogućio je lakše, brže i jeftinije prikupljanje željenih informacija i jednostavnije upravljanje velikim brojem dokumentovanih informacija (dokumentacije). U tom smislu u okviru ovog rada postavljen je cilj da se razvije integrirani informacioni sistem (IIS) koji će omogućiti brzo prikupljanje velikog broja informacija u svrhu preduzimanja adekvatnih mjera za praćenje efikasnosti sistema upravljanja. Polazeći od toga, u radu je uspostavljen IMS (QMS+EMS+OHSMS+ FSMS) u preduzeću iz oblasti mlinsko-pekarske proizvodnje i data su rješenja za povećanje efikasnosti sistema upotrebom ICT-a. Poseban akcenat dat je na razvoj i korištenje dokumentovanih informacija u IMS. Nakon toga, dobijeni model je integriran sa informacionim sistemom.

Ključne riječi: Integrirani informacioni sistem, Integrirani sistem upravljanja, Dokumentovane informacije

DOCUMENTED INFORMATION IN THE INTEGRATED MANAGEMENT SYSTEM

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Abstract. Implementation of several separate management system standards implies duplication of many activities, including extensive documentation. Past practice has shown that employees have a hostile attitude towards it. Integrating multiple management systems into an integrated management system (IMS) brings various benefits. Integration affects the shortening of the required time, the burden on employees, more efficient use of technical and financial resources, and excludes the need for multiple collection and processing of information, leads to a reduction in the volume of documentation, and frees the system from unnecessary bureaucratization. Given the volume of input and output elements during the development and application of IMS, and extensive documentation, information and communication technologies (ICT) can provide significant support to the organization. The development of information and communication technologies, first of all cheap hardware, databases and software, has made it easier, faster and cheaper to collect the desired information and simpler management of a large number of documented information (documentation). In this sense, within this work, the goal is to develop an integrated information system (IIS) that will enable the rapid collection of a large amount of information for the purpose of taking adequate measures to monitor the efficiency of the management system. Based on that, the work established an IMS (QMS+EMS+OHSMS+ FSMS) in a company from the field of mill-bakery production and solutions were given to increase the efficiency of the system by using ICT. Special emphasis is placed on the development and use of documented information in IMS. After that, the obtained model is integrated with the information system.

Key words: Integrated information system, Integrated management system, Documented information

RAZMATRANJE POSTURE I ERGONOMSKIH USLOVA OSOBLJA KOJE RADI SA DJECOM U VRTIĆU

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Sažetak. Dobro držanje u mirovanju i u pokretu omogućava mišićima da rade uz najmanje napora, štiti lokomotorne organe od oštećenja i ozljeda i osigurava najbolji položaj unutrašnjih organa. Možemo svjesno kontrolirati i ispravljati svoje držanje. Vaspitno osoblje u vrtićima ima dosta iznuđenih držanja i neergonomskih položaja, koji su dio prirode posla. Cilj istraživanja je pokazati opterećenje i štetnost poslova obrazovnog osoblja. U periodu 2018 – 2023. godine izvršena je kvantitativna analiza odgojno-obrazovnog osoblja u vrtićima Općine Ljubljana. U istraživanju je učestvovalo 24 nastavnika i 28 pomoćnih nastavnika. Korištena je metoda trenutnog posmatranja - modifikovanu OWAS metodu. Istovremeno, metodom CORLETT, procijenjena je i nelagoda u njihovim dijelovima tijela. Učesnici su praćeni tokom cijelog radnog vremena. Utvrđeno je, da u položajima torakolumbalne kičme, gornjih udova, ruku i vratne kičme, opterećenja u jednom ili više segmenata premašuju fiziološke preporuke kako za nastavnike tako i za njihove asistente, te da je potrebno poduzeti odgovarajuće mjere. Položaji donjih udova i savladavanje sile ne predstavljaju velika opterećenja za većinu zaposlenih. Rezultati Corlett metode kod vaspitačica pokazuju, da se tokom rada ističe nelagodnost u donjem i gornjem delu leđa, desnoj i lijevoj butini i potiljku. Asistenti vaspitačica imaju veću nelagodu u mišićima nego vaspitačice, vjerovatno zbog dužeg radnog vremena. Obrazovno osoblje izloženo je različitim faktorima rizika na radnom mjestu, koji mogu dovesti do infekcija, povreda, povećanog stresa i fizičkog opterećenja. Fizičko opterećenje je jedan od ključnih uzroka mišićno-koštanih poremećaja. Predlaže se uvođenje kratkih aktivnih pauza za rasterećenje mišića leđa, vrata, ramena, donjeg dijela leđa i potkoljenica i jačanje mišića prednjeg dijela tijela, posebno trbušnog zida. Preporučuje se i edukacija o značenju i ciljevima ergonometrije na radnom mjestu, kao i praktičnu demonstraciju ispravnih položaja tijela na poslu, koji smanjuju statička opterećenja kretanja.

Ključne riječi: opterećenja, mjerna analiza radnog mjesta, vaspitno osoblje, ergonomija, vrtić

CONSIDERATION THE POSTURE AND ERGONOMIC CONDITIONS OF STAFF WORKING WITH CHILDREN IN KINDERGARTEN

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Abstract. Correct posture at rest and in motion allows muscles to work with minimum effort, protects the locomotor organs from damage and injury, and ensures the best positions for the internal organs. Posture can be consciously controlled and corrected. Kindergarten staff are often exposed to a lot of forced and unergonomic postures, which are part of the work nature. The aim of the research is to show the burdens and hazards of the educational staff's jobs. We analysed the educational staff in kindergartens in the Municipality of Ljubljana between 2018 and 2023. The survey involved 24 educators and 28 assistant educators. We used the method of momentary observation - a modified OWAS method. At the same time, we used the CORLETT method to assess work-related discomfort in their body parts. Participants were monitored throughout their working time. We found that in working positions and postures of the thoracolumbar spine, upper limbs, arms and cervical spine, the loads in one or more segments exceeded the physiological recommendations for both the teachers and their assistants, and that appropriate action should be taken. The results of the Corlett assessment of muscle discomfort in educators show that discomfort in the lower and upper back, right and left thighs, and buttocks is prevalent at work. Educator assistants have more muscle discomfort than educators, probably due to the longer working hours. Educational staff are exposed to a variety of risk factors in the workplace that can lead to infections, injuries, increased stress and physical strain. Physical burden is one of the key causes of musculoskeletal disorders. We propose the introduction of short active breaks to relieve muscle strain. We also recommend education on the meaning and objectives of ergonomics in the workplace and practical demonstration of correct body postures at work to reduce static burdens on the limbs.

Key words: burdens, workplace measurement analysis, educational staff, ergonomics, kindergarten

ANALIZA STAVOVA ADOLESCENATA U ISTRAŽIVANJU O ZLOUPOTREBI PSIHOAKTIVNIH SUPSTANCI IZ 2013. I 2023. GODINE

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Sažetak. U prevenciji rizičnih ponašanja adolescenata najveću ulogu ima društvo i zajednica. Dostupnost psihoaktivnih supstanci od početka 21. vijeka je u konstantnom porastu, što utiče na obrazac odrastanja adolescenata i formiranje konačne ličnosti i prosperiteta budućeg odgovornog građanina. Cilj rada je da se analizom podataka iz istraživanja provedenih 2013. godine, koje je izvršeno u svrhu izrade master rada na Medicinskom fakultetu Univerziteta u Beogradu na odsijeku za javno zdravlje, i analizom podataka istraživanja iz 2023. godine utvrdi da li su se u desetogodišnjem periodu promijenili stavovi adolescenata vezani za zloupotrebu psihoaktivnih supstanci (PAS) sa osvrtom na konzumiranje duvana i alkohola. Oba istraživanja su studije presjeka sprovedene tokom aprila i maja, koja su obuhvatila srednje škole JU Gimnazija "Sveti Sava" Prijedor, JU Srednjoškolski centar Prijedor iz struke zdravstva i JU Mašinska škola Prijedor. Instrument istraživanja je standardni upitnik dizajniran od strane ESPAD-a (eng. *European School Survey Project on Alcohol and Other Drugs*), prilagođen prostorima na kojima je vršeno istraživanje. Analizirana pitanja su se odnosila na dostupnost cigareta, alkohola i marihuane, njihovo korištenje od strane ispitanika, poznavanja zdravstvenih rizika za korištenje ovih PAS. Rezultati su pokazali da je cigarete u 2013. godini konzumiralo oko 15% ispitanika, dok ih je u 2023. godini konzumiralo 26,6%. Više od 70% ispitanika iz 2013. godine pili su alkoholna pića, a u 2023. godini alkohol je konzumiralo 85,9% ispitanika. Približno 12,5% ispitanika iz 2013. godine konzumiralo je marihuanu, dok se u 2023. godini dogodio blagi pad procenta koji je iznosio 9,1%. Najveći broj učenika iz istraživanja 2013. godine koji konzumiraju cigarete, alkohol ili marihuanu dolazili su iz Gimnazije, dok su iz 2023. godine bili učenici koji dolaze iz Mašinske škole. Ova analiza rezultata iz 2013. i 2023. godine pokazuje da su cigarete, alkoholna pića i marihuana i dalje veoma lako dostupna materija adolescentskoj populaciji koja u veoma značajnom procentu koristi alkohol, iako u velikom procentu prepoznaju zdravstvene rizike konzumiranja ovih PAS.

Ključne riječi: adolescenti, stavovi, rizici, konzumiranje cigareta i alkohola

ANALYSIS OF ADOLESCENTS' ATTITUDES IN RESEARCH ON THE ABUSE OF PSYCHOACTIVE SUBSTANCES FROM 2013 AND 2023

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Abstract. Society and the community play the biggest role in the prevention of risky behavior among adolescents. The availability of psychoactive substances has been constantly increasing since the beginning of the 21st century, which affects the model of adolescent growing up and the formation of the final personality and prosperity of a future responsible citizen. The aim of the paper is to analyze the data from the research conducted in 2013, which was carried out for the purpose of creating a master's thesis at the Faculty of Medicine of the University of Belgrade in the Department of Public Health, and by analyzing the research data from 2023 to determine whether in the ten-year period changed the attitudes of adolescents related to the abuse of psychoactive substances (PAS) with reference to the consumption of nicotine and alcohol. Both surveys are cross-sectional studies conducted during April and May, which included secondary schools PI Gymnasium "Sveti Sava" Prijedor, PI High School Center Prijedor in the field of health and PI Mechanical High School Prijedor. The research instrument is a standard questionnaire designed by European School Survey Project on Alcohol and Other Drugs, adapted to the areas where the research was conducted. The analyzed questions related to the availability of nicotine, alcohol and marijuana, their use by respondents, knowledge of the health risks of using these PAS. The results showed that in 2013, about 15% of respondents consumed nicotine, while in 2023, 26.6% consumed them. More than 70% of respondents from 2013 drank alcoholic beverages, and in 2023, 85.9% of respondents consumed alcohol. Approximately 12.5% of respondents from 2013 consumed marijuana, while in 2023 there was a slight drop in the percentage, which amounted to 9.1%. The largest number of students from the research in 2013 who consume nicotine, alcohol or marijuana came from the Gymnasium, while from 2023 they were students coming from the Mechanical High School. This analysis of the results from 2013 and 2023 shows that nicotine, alcoholic beverages and marijuana are still very easily accessible substances for the adolescent population, who use alcohol in a very significant percentage, although a large percentage recognize the health risks of consuming these PAS.

Key words: adolescents, attitudes, risks, nicotine and alcohol consumption

DRUŠTVENO KORISNO UČENJE U ZAJEDNICI

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Sažetak. Društveno korisno učenje je nastavna metoda kojom učenici i studenti znanje i vještine koje su stekli kroz nastavni proces primjenjuju na konkretnom zadatku u zajednici. U središtu takvog učenja je studentski angažman, čime studenti postaju aktivni građani, direktno uključeni u rješavanje određenog društvenog problema čime se stječe snažniji osjećaj osobne društvene odgovornosti kao i dugoročna integracija u društvo. Društveno korisno učenje treba biti povezano s obrazovanjem, ali i s dobrobiti koju od takvog angažmana dobiva zajednica. Dosadašnja su istraživanja dokazala da ovakav način uključivanja studenata u rad zajednice doprinosi boljem usvajanju znanja, osnaživanju osvjешtenosti i kritičkog promišljanja te pruža priliku za primjenu novostečenih znanja i vještina u realnim životnim situacijama u vlastitim zajednicama. Rad na projektima prirode i okoliša pruža mnogobrojne i raznovrsne mogućnosti za provođenje društveno korisnog učenja. Među njima su aktivnosti iz područja uređivanja okoliša, smanjivanja otpada, uređivanja planinarskih staza, obilježavanja značajnih dana poput Dana planeta Zemlje, mjerenje buke, rad u botaničkim i ZOO vrtovima, Parkovima prirode itd. Društveno korisno učenje izuzetno je korisno i u obrazovanju radnih terapeuta osobito u području socijalne pravde i jednakosti. Kroz ovaj oblik učenja studenti povećavaju svoje znanje o raznolikosti i kulturološkim pitanjima te značenju skrbi usmjerene na klijenta. Društveno korisno učenje u radnoj terapiji povezuje studente s partnerima u zajednici kroz strukturirane prilike za postizanje akademskih ciljeva učenja, a istovremeno se bavi potrebama zajednice. Studente se uključuje u rad u zajednici kako bi bolje razumjeli kontekste koji okružuju neki društveni problem, za razliku od pukog volontiranja u kojem se isključivo pružaju usluge u zajednici.

Ključne riječi: društveno korisno učenje, zajednica, zaštita okoliša i prirode, radna terapija

COMMUNITY BASED LEARNING

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Abstract. Community-based learning is a teaching method by which pupils and students apply the knowledge and skills they have acquired through the teaching process to a specific task in the community. At the focus of such learning is student engagement, whereby students become active citizens, directly involved in solving a certain social problem, thereby gaining a stronger sense of personal social responsibility as well as long-term integration into society. Community-based learning should be related to education and also to the benefits the community gains from such engagement. Previous research has proven that this way of involving students in the work of the community contributes to a better acquisition of knowledge, strengthening awareness and critical reflection, and provides an opportunity to apply newly acquired knowledge and skills in real life situations in their own communities. Working in nature and environmental projects provides numerous and varied opportunities for socially useful learning. Among them are activities in the field of environmental management, waste reduction, maintenance of hiking trails, marking important days such as Earth Day, noise measurement, work in botanical and zoological gardens, nature parks, etc.

Community-based learning is extremely useful in the education of occupational therapists, especially in the field of social justice and equality. Through this form of learning, students increase their knowledge of diversity and cultural issues and the meaning of client-centered care. Community-based learning in occupational therapy connects students with community partners through structured opportunities to achieve academic learning goals while addressing community needs. Students are involved in community service in order to better understand the contexts surrounding a social problem, as opposed to mere volunteering in which community services are provided exclusively.

Key words: community-based learning, community, environmental and nature protection, occupational process, nurses, nursing diagnoses

VITAMIN D₃: INKAPSULACIJA I STUDIJA FIZIČKE STABILNOSTI

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Sažetak. Kalcijum i vitamin D₃, su esencijalno važni nutrijenti za čovjekov organizam. Vitamin D₃ je odgovoran za apsorpciju kalcijuma i fosfora, čime je direktno povezan sa održanjem koštane mase. Ujedno je važan i za očuvanje normalne funkcije mišića, kao i imunološkog sistema. Dodaci ishrani koji sadrže vitamin D₃ i kalcijum su prisutni na tržištu, ali ove formulacije se susreću sa mnogim izazovima vezanim za stabilnost i rastvorljivost, a samim tim i za bioraspoloživost, prvenstveno vitamin D₃. Vitamin D je veoma osjetljiv na temperaturu, svjetlost, kiseonik i pH sredinu, stoga je adekvatan način inkapsulacije vitamin D₃ u formulaciji veoma značajan. U studiji je predstavljena inovativna inkapsulacija vitamin D₃ na nosaču koji se sastoji od polimerne komponente (PVA) i CaCO₃, koji imaju ulogu da poboljšaju vezivanje i termičku stabilnost vitamin D₃, a ujedno predstavljaju i izvor kalcijumovih jona, koji su važni zbog sinergističkog efekta vitamin D₃ i Ca²⁺ jona. Dobijeni rezultati su pokazali da je inkapsulacija bila efikasna i da je CaCO₃/PVA nosač poboljšao vezivanje vitamin D₃. Termička studija je pokazala da je degradacija vitamin D₃ na nosaču pomjerena za 50°C u odnosu na čisti vitamin D₃. Zahvalnica: Ministarstvo za naučnotehnološki razvoj i visoko obrazovanje Republike Srpske podržali su ovu studiju kroz projekat br. 19.032/961-96/23.

Ključne riječi: vitamin D₃, kalcijum karbonat, inkapsulacija, sistemi za isporuku lijekova

CaCO₃/POLYVINYL ALCOHOL (PVA) AS A SUITABLE CARRIER FOR LIPOSOLUBLE VITAMIN D₃: ENCAPSULATION AND PHYSICAL STABILITY STUDY

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Abstract. Calcium and vitamin D₃ are essential nutrients for the human body. Vitamin D₃ is responsible for the absorption of calcium and phosphorus, which is directly related to the maintenance of bone mass. It is also important for maintaining normal muscle function and also the immune system. Dietary supplements containing vitamin D₃ and calcium are commercially available, but these formulations face many challenges related to stability and solubility, and therefore bioavailability, primarily vitamin D₃. Vitamin D is very sensitive to temperature, light, oxygen and pH environment, therefore an adequate way of encapsulating vitamin D₃ in the formulation is very important. The study presents an innovative encapsulation of vitamin D₃ on a carrier consisting of a polymer component (PVA) and CaCO₃, which have the role of improving the binding and thermal stability of vitamin D₃, and at the same time represent a source of calcium ions, which are important due to the synergistic effect of vitamin D₃ and Ca²⁺ ions. The obtained results showed that the encapsulation was effective and that the CaCO₃/PVA carrier improved the binding of vitamin D₃. A thermal study showed that the degradation of vitamin D₃ on the carrier was shifted by 50°C compared to pure vitamin D₃. Acknowledgment: The Ministry of Science and Technology Development and Higher Education of the Republic of Srpska supported this study through project No. 19.032/961-96/23.

Key words: vitamin D₃, calcium carbonate, encapsulation, drug delivery systems

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