



Akademija medicinskih znanosti Hrvatske



Svjetska zdravstvena organizacija



Sveučilište u Zagrebu, Medicinski fakultet, Škola narodnog
zdravlja "Andrija Štampar"

Znanstveni skup

Kardiovaskularno zdravlje

Prehrana i sol

Knjiga sažetaka radova sa
znanstvenog skupa održanog 21. studenoga 2008. u Zagrebu



Zagreb
MMVIII

KARDIOVASKULARNO ZDRAVLJE

PREHRANA I SOL

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Urednici

Silvije Vuletić, Josipa Kern, Inge Heim i Marija Strnad

Izdavač

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Predgovor

Akademija medicinskih znanosti Hrvatske organizira svoj četvrti internacionalni znanstveni skup posvećen značajnom i aktualnom problemu visoke prevalencije kardiovaskularnih faktora rizika u populaciji Hrvatske. Tri dosadašnja simpozija o kardiovaskularnom zdravlju u populaciji Hrvatske ukazala su na nejednoliku regionalnu raspodjelu kardiovaskularnih faktora rizika (KVFR), nedovoljnu razvijenost preventivnih aktivnosti u borbi za smanjenje kardiovaskularnih bolesti u populaciji te na slabu implementaciju nacionalne strategije smanjenja kardiovaskularnih bolesti na lokane razine zdravstvene zaštite.

Tema četvrtog znanstvenog skupa je *Kardiovaskularno zdravlje - prehrana i sol*. Sol kao osnovna tema prevladava u svim prezentacijama ovog znanstvenog skupa.

Dvije uvodne teme govore o razlozima za smanjenje soli u prehrani i o potencijalnom učinku na zdravlje populacije - preporuke Svjetske zdravstvene organizacije te o nacionalnom programu smanjenja unosa soli u Hrvatskoj.

G. MacGregor kao gost i glavni predavač uvodi u rad ovaj znanstveni skup s prezentacijom o smanjenju unosa soli: od spoznaje do implementacije. Slijede teme o znanju i praksi korištenja soli u prehrani – iskustva u Bosni i Hercegovini, zatim o regionalnim karakteristikama konzumacije soli u Hrvatskoj, o industrijskim prehrambenim proizvodima kao udaru soli na konzumente, o smanjenju unosa soli, od informacije do ponašanja, o cerebrovaskularnim i malignim bolestima vezanim uz prehranu i sol, o hipertenziji općenito te hipertenziji u djece i adolescenata, o prehrani školske djece, prehrani koja „skriva“ sol kao jedan od čimbenika rizika za srčanožilne bolesti, o prehrani kao riziku za kardiovaskularne bolesti sa stanovišta obiteljske medicine, te o ulozi medicinske sestre u programu smanjenja unosa soli.

Tematski dio znanstvenog skupa završava s tri prezentacije o prehrani i mršavljenju kao značajnim čimbenicima kardiovaskularnog zdravlja, o koronarnom bolesniku kontinentalne i mediteranske Hrvatske, i organizaciji prehrane u bolnici.

Želimo da ovaj znanstveni skup, ove godine s gostima iz Engleske i Bosne i Hercegovine, bude tek četvrta karika u lancu simpozija o kardiovaskularnom zdravlju, da inicira petu kariku, peti simpozij u lancu nastojanja cjelokupnog zdravstva, Akademije medicinskih znanosti Hrvatske i Svjetske zdravstvene organizacije sa ciljem smanjenja kardiovaskularnih rizika u populaciji Hrvatske i unaprijedi kardiovaskularno zdravlje u našoj zemlji.

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Razlozi za smanjenje soli u prehrani i potencijalni učinak na zdravlje populacije – preporuke SZO

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Poznato je da redukcija soli rezultira smanjenjem krvnog tlaka i kardiovaskularnih incidenata. U prosjeku, dnevni unos soli iznosi više od 200 % u odnosu na dnevne preporučene količine, a uglavnom se osigurava iz industrijski obrađenih namirnica. Procjenjuje se da je u Hrvatskoj prosječan unos soli oko 12 gr soli na dan (preporuka SZO je <5 gr / dan). Glavni izvori natrija u prehrani su industrijski prehrambeni proizvodi i hrana pripremljena u restoranima (77 %), prirodni sadržaj natrija u namirnicama (12 %), dosoljavanje tijekom konzumacije objeda (6 %) i pripreme obroka kod kuće (5 %). Ako bismo unos soli smanjili za 50 % to bi rezultiralo spašavanjem gotovo 180 000 života u Europi godišnje. Radi postizanja ograničenog dnevnog unosa soli u skladu s preporukama SZO, potrebno je uspostaviti čvršću suradnju s prehrambenom industrijom radi smanjenja sadržaja soli u industrijski pripremljenim odnosno obrađenim namirnicama. Nadalje, potrebno je potaknuti proizvođače i osigurati ponudu prehrambenih proizvoda i obroka s niskim ili smanjenim sadržajem soli (dućani, catering, promjene u recepturama, ponuda zamjena za sol). Ovaj vid suradnje temelji se na obostranim interesima koji mogu rezultirati povoljnim zdravstvenim učincima. Jedna od najvažnijih javnozdravstvenih zadaća je educirati potrošače i omogućiti im odabir, kao i donošenje odluke prilikom kupovine namirnica. To se može postići putem sadržajnih kampanja i socijalnog marketinga te osiguranja deklaracija o sadržaju soli ili posebno dizajniranih oznaka za proizvode s niskim ili smanjenim sadržajem soli na prehrambenim proizvodima.

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Reasons for reduction of salt in diets and potential effect on population health – WHO recommendations

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It is well known that reduction in salt results in lowering blood pressure and cardiovascular incidents. Daily salt intake is double the recommended daily quantity, and mainly comes from processed food. The assessment of daily salt intake for Croatia is 12 g/day (WHO recommendation is <5 g/day). The main source of sodium is processed food and food prepared in restaurants (77%), natural content of sodium in food (12%), added salt at the table (6%) and prepared meals at home (5%). Reduction of salt by 50% would save nearly 180 000 lives per year in Europe. It is necessary to establish better collaboration with food manufactures in order to reduce the content of salt in processed food and to achieve appropriate salt intake per day in accordance with the WHO recommendations. Further, it is necessary to encourage the food manufacturers to produce food and meals with low or reduced salt content (shops, catering, changes in recipes, offer salt substitutions). This kind of collaboration is based on bilateral interests which can result in positive health effects. One of the most important public health tasks is to educate the consumer and to give them a choice when buying food. This can be achieved by effective campaigns and social marketing, by ensuring a declaration of salt content on the product, or specially designed signs for food products with low or reduced content of salt.

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Salt - From evidence to implementation

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Worldwide, raised blood pressure throughout its range is the major cause of death and the second leading cause of disability after childhood malnutrition through the strokes, heart attacks and heart failure it causes¹. More than 60% of all strokes and approximately half of all heart disease is due to raised blood pressure².

Our current high salt intake is the major cause of raised blood pressure and is largely responsible for the rise in blood pressure that occurs in almost all adults as they grow older. Evidence that relates salt intake to blood pressure comes from six different lines of evidence - epidemiology, migration, intervention, treatment, animal and genetic studies. All of these suggest that salt intake is important in blood pressure regulation and a reduction in salt intake would lead to a reduction in population blood pressure, a reduction in the rise in blood pressure with age and a reduction in blood pressure in those who already have high blood pressure whether on or off blood pressure treatment³.

The current salt intake in developed countries is between 10 and 20 grams per day. After considering all the evidence, the World Health Organisation recently set a world-wide target of reducing salt intake to 5 grams or less per day for all adults. The recommendations in the UK and USA agree with this, suggesting that the maximum intake of salt should be less than 6 grams a day and much lower levels have been set in the UK for children depending on age. In most developed countries, but not all, most of the salt that is consumed is passive - that is it is already added to processed, ready prepared, canteen, restaurant, fast and takeaway foods, etc. Only 15% of salt intake is added in cooking or at the table and 5% is naturally present in foods.

The only way that a reduction in a population's salt intake can be made in the majority of countries is by the food industry slowly reducing the very high and unnecessary salt concentrations of all foods where salt has been added. In addition, a public campaign educating the public about the dangers of eating too much salt would lead to the use of less table and cooking salts and high salt sauces, eg soya, and add to the pressure on the food companies.

It is also vital, and should be mandatory, that all foods should be clearly labelled. Salt labelling should detail the salt content per serving with the recommended intake per day by the side. There should also be a signpost labelling system which indicates whether a product is low (green), moderate (amber) or high (red) in salt⁴.

If this programme was carried out worldwide, the benefits would be very large. For instance, if salt intake is reduced by 6 grams a day, there would be a 24% reduction in stroke mortality and an 18% reduction in coronary heart disease mortality (estimated from the fall in blood pressure that would occur from the most recent meta-analysis of salt reduction trials)⁵. In the UK, with a population of approximately 60 million, a 6 gram per day reduction in salt intake would prevent approximately 70,000 strokes and heart attacks each year, 35,000 of which are fatal. These benefits are the minimum effects that would occur and it is likely that in the long term blood pressure falls would be larger and the rise in blood pressure with age would be less.

Of all public health strategies, a reduction in population salt intake is the most easy to achieve as it only requires the food industry to change the salt concentration of food and this can easily be done as evidenced by the progress that has already been made in the UK in reducing the salt content of most foods where salt has been added. In the UK salt intake has already fallen from 9.5 to 8.6 grams/day (i.e. a 10% reduction) from when salt reduction first started in 2004 to the end of 2006. This public health strategy has the great advantage that it does not mean that the public have to change what they buy or eat, unlike trying to stop cigarette smoking or increasing fruit and vegetable consumption or losing weight. The change would occur without the public necessarily being involved, although clearly this would be helped by a public health campaign. For once, the UK is leading in this area of public health and, if successful, all other countries will follow as there will be immediate benefits as soon as salt intake falls and much larger benefits subsequently on cardiovascular morbidity and mortality.

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Nacionalni program smanjenja konzumiranja soli u Hrvatskoj

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Iako zapravo nema točnih podataka, smatra se da je prosječno konzumiranje kuhinjske soli u Hrvatskoj izrazito veliko, odnosno da unos soli značajno premašuje onaj preporučeni. Postoji niz dokaza da veliki unos soli potiče i održava povišeni arterijski tlak u većine pučanstva te da, s druge strane, čak i umjereno smanjenje unosa soli dovodi do sniženja arterijskog tlaka. Povišeni arterijski tlak jedan je od najvažnijih čimbenika rizika za kardiovaskularne bolesti, a osobito za cerebrovaskularne bolesti. Stoga se smatra da bi se smanjenjem unosa soli moglo postići smanjenje pojave neželjenih kardiovaskularnih događaja i smrtnosti od tih bolesti. Budući je također uočeno postojanje pozitivne povezanosti između količine natrija u mokraći, koja je najpouzdaniji pokazatelj unosa soli, i hipertrofije lijeve klijetke, čini se da također postoji značajna povezanost između unosa soli hranom i učinaka nevezanih uz arterijski tlak.

Kardiovaskularne bolesti su vodeći uzrok smrtnosti u cijelom svijetu uključujući i Hrvatsku u kojoj one uzrokuju više od 50% svih smrti. To je i bio razlog zbog kojega je Akademija medicinskih znanosti Hrvatske zajedno sa nekoliko stručnih društava kao što su Hrvatsko društvo za arterijsku hipertenziju, Hrvatsko društvo za aterosklerozu i Hrvatsko kardiološko društvo pokrenula akciju za smanjenje konzumiranja soli u hrvatskoga pučanstva i načinila Nacionalni program smanjenja unosa soli. Tijekom posljednja dva desetljeća u više su zemalja u raznim dijelovima svijeta pokrenute slične akcije osobito usmerene ka prevenciji kardiovaskularnih bolesti. Neke od njih, primjerice ona u Velikoj Britaniji, već su se pokazale vrlo uspješnim.

Prva zadaća hrvatskog nacionalnog programa je doći do točnih podataka o konzumiranju soli u raznim dijelovima Hrvatske mjerenjem količine natrija u mokraći. Budući se većina soli unosi gotovom i polugotovom hranom te restoranskim obrocima, neophodno je postići smanjenje sadržaja soli upravo u tim jelima. Stoga će se u sklopu programa načiniti plan smanjenja sadržaja soli u različitim vrstama namirnica. Prehrambena industrija svojim proizvodima bitno doprinosi količini soli koja se unosi hranom. Zato će se ostvariti kontakti s najvećim prehrambenim tvrtkama i nastojati će se potaknuti proizvodnja namirnica s manjim sadržajem soli, a stručna će društva promicati konzumiranje tih namirnica. U kontaktima s vladom će se također nastojati postići veća dostupnost namirnica s manjim sadržajem soli što se može ostvariti primjerice nižom stopom poreza za te namirnice i drugim mjerama koje bi omogućile da takve zdravije namirnice budu zbog niže cijene dostupnije širem pučanstvu od onih uobičajenih i manje zdravih. Za sada u Hrvatskoj ne postoji zakonska obveza navođenja sadržaja soli ili natrija na deklaraciji uz namirnice. Radi toga će se nastojati postići uvođenje takve obveze. Različitim kampanjama i promičbenim akcijama nastojati će se uvjeriti ljude u korist konzumiranja hrane koja sadrži manje soli, poput svježeg voća i povrća, te važnost izbjegavanja hrane s mnogo soli. Preporučivati će se izbjegavanje dosoljavanja hrane prigodom konzumiranja hrane (što je u nas, na žalost, česta pojava) i uporaba što je moguće manje soli prigodom pripremanja hrane kod kuće. Važno je naglasiti da te aktivnosti nikako neće ugroziti primjereni unos joda u organizam koji se u mnogim zemljama, pa tako i u Hrvatskoj, dobrim dijelom unosi jodiranom kuhinjskom solju.

Za očekivati je da će sve te aktivnosti usmjerene prema pojedinim dijelovima civilnog društva, vladi i dijelovima prehrambene industrije za posljedicu imati ne samo smanjenje arterijske hipertenzije i kardiovaskularnih bolesti već i značajno smanjenje troškova vezanih za zdravstvo – kako onih koji se mogu u kratkom roku vidjeti zbog, primjerice, značajno manje potrošnje antihipertenziva, tako i onih dugotrajnijih zbog smanjenja smrtnosti, potrebe dugotrajnog liječenja i invalidnosti uzrokovanih kardiovaskularnim bolestima.

National programme for the reduction of salt intake in Croatia

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Although the exact data are still lacking, it is estimated that average salt consumption in Croatia is excessively high and well above the recommended limits. Overwhelming evidence exists that high intakes of salt produce and maintain elevated blood pressure in a big proportion of population and that, on the other hand, even modest reduction in salt intake lowers the blood pressure. Elevated blood pressure has been identified as one of the most important risk factors for cardiovascular diseases (CVD), and particularly cerebrovascular diseases. Therefore, reduction of salt intake should reduce CVD events and mortality. Since a positive correlation between urinary sodium, which is the most reliable estimate of salt intake, and left ventricular hypertrophy was also found, significant non-blood pressure-related effects of dietary salt seem to be important as well.

CVD are the leading cause of death worldwide including Croatia causing more than 50% of all the deaths in Croatia. Therefore, Croatian Academy of Medical Sciences together with an alliance of societies including Croatian Hypertension Society, Croatian Atherosclerosis Society and Croatian Cardiac Society, launched an initiative to reduce salt intake in Croatian population developing a National program for the reduction of salt intake. During the last two decades quite a number of countries around the world have started similar action programs particularly directed towards CVD prevention. Some of them, e.g. the one in United Kingdom, have already proven to be success stories.

The first task of Croatian program is to obtain the exact data on salt consumption in different parts of Croatia by measuring the urinary sodium. Since most salt derives from processed and restaurant foods, a reduction of salt contents in these sources is necessary to reduce exposure. Therefore, strategies to reduce the salt content of all food groups will be developed. Food industry contributes substantially to the amounts of dietary salt intake so it will be approached and stimulated to start producing the foods with lower salt content and the use of this food will be promoted by the alliance members. The government will be approached as well to promote the availability and use of food with less salt content by, for example tax reductions and other policies, which would make healthier choices cheaper than the conventional ones and thus more available. So far in Croatia there is no regulation concerning obligatory labeling of salt or sodium content. Therefore, the introduction of such legislation on labeling will be advocated. By different public actions and advertising activities people will be advised to choose foods with low salt content such as fresh fruits and vegetables and to avoid foods with high salt content. They will be also counseled to refrain from adding salt at the table (which is in Croatia very often) and to minimize the amount of salt used in cooking. It is important to stress that these activities will not jeopardize the appropriate iodine intake because ionized salt is an important source in many countries including Croatia.

It is expected that all these coordinated activities at the level of civil society, government and responsible sections of the food industry will result not only in reducing hypertension and CVD but also in considerable savings on health expenditures – those short-term due to less antihypertensive drugs usage as well as those long-term because of less deaths and disability due to CVD.

Znanje i praksa korištenja soli u ishrani

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So je proizvod kristalizacije slanih otopina, koja se pretežno sastoji od Natrijeva hlorida (1).

Kao dodatak hrani je značajan i neophodan za zdravu probavu, za regulaciju tekućine u tijelu, za kvalitetno funkcionisanje nervnog sistema, a kao nosilac joda, u funkciji je preventivne zaštite gušavosti, ali unos soli mora biti u umjerenim količinama jer nekontrolisano, preveliko unošenje soli, može imati svoje negativne posledice. Kao gornju granicu unosa kuhinjske soli za zdravu populaciju, preporučuje se 6 g dnevno (2), a po nekim autorima, u ishrani treba koristiti što manje soli - npr. pola kašike, oko 3-4 g (3). Manja količina soli u ishrani predstavlja manji rizik za nastanak povišenog krvnog tlaka, osteoporoze (3).

Istraživanjem se željelo sagledati znanje i praksa o korištenju soli u ishrani kod pacijenata liječenih u Univerzitetskom kliničkom centru Sarajevo. Ukupno je anketirano 300 pacijenata pomoću anketnog upitnika koji je sastavljen od 11 pitanja. Uvažavajući da čovjek 10% soli unosi u prirodnoj hrani, 75% pri preradi – obradi namirnica i 15 % dodavanjem pri pripremi hrane i na trpezi (3), bilo je opravdano sprovesti ovaj vid istraživanja putem anketiranja. Jednočlane i dvočlane porodice troše u najvećem procentu po 200 gr soli mjesečno, tročlane u istom procentu 48%, 200 gr i 500 gr, dok višečlane troše u najvećem procentu po 500 grama mjesečno. Vegetu kao dodatak jelima jednočlane porodice troše u najvećem procentu po 100 grama, dvo, tro i četvoročlane porodice troše najviše 200 grama, a porodice sa 5 i više članova po 500. grama.

Odnos prema suhomesnatim proizvodima je različit. Oni koji ih uopšte ne koriste je 26% (jednočlane porodice), a 16,6% ih koriste 4 i više puta (šestočlane porodice). Punomasni sir u najvećem procentu (62,8%) četvoročlane porodice uopće ne konzumiraju, vjerovatno iz ekonomskih razloga. Perece, slane štapiće, često jede 56% ispitanika. Na pitanje koja oboljenja bi se mogla dovesti u vezu sa soli, 60.33% so povezuje sa bubrežnim oboljenjima, a u manjim procentima sa hipertenzijom, srčanim oboljenjima, sa štitnom žlijezdom i sa dijabetesom. Hranu dosoljava 37% ispitanika. Da potpuno izbjegava so u ishrani ističe 7,33% ispitanika, a ostali ispitanici smatraju da so nije potrebno potpuno izbjegavati. Da ispitanici nemaju realan stav o količini soli koju konzumiraju govori podatak da na pitanje da li troše puno ili malo soli 65% je mišljenja da troši malo soli, ali u 60 % slučajeva misli da so puno utiče na zdravlje. Moglo bi se zaključiti da je prosječna količina soli po članu domaćinstva koju ispitanici konzumiraju jako promjenljiva u odnosu na zastupljenost članova u porodici i opada sa rastom članova porodice. a veća je od količine koju preporučuje SZO, mada je količinu potrošene soli putem ankete veoma teško precizno kvantificirati. Ovom problemu neophodno je pristupiti organizovanije u edukativnom, zdravstveno vaspitnom i istraživačkom smislu.

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Knowledge and practice of salt using in the nutrition

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Salt is a strong tasting substance, in the form of white powder or crystals, predominantly composed from Sodium and Chloride (1).

As a food supplement, salt is very important for healthy digestion, regulation of body's liquid and functioning of nervous system, but as Iodine carrier, salt plays important role in prevention of goiter. Average quantity of salt for normal population is 6 grams daily (2), but some authorities suggested less – 3 or 4 grams daily. Less quantity of salt means smaller risk of hypertension and osteoporosis development (3).

In this research we would like to present knowledge and practice of salt usage in the nutrition of patients treated in Clinical University Centre Sarajevo. 300 patients were examined through an 11 questions questionnaire. Keeping in the mind that a healthy individual takes about 10% of salt through the natural food, 75% through the treated food and 15% adding salt on the table (3), we decided to make this research by means of a questionnaire. One-member and two-member families used mainly 200 grams salt per month, three-member and bigger families used 500 grams salt monthly. Different types of seasoning blend (like Vegeta) were used in quantities of 100 grams in one-member families, and 200 – 500 grams in bigger size families.

Considering the consumption of salted and smoked meat there slight distinctions. 26% (mainly one-member families) don't consume this kind of meal at all, in the opposite to 16.6% (six-member families) which consume salted and smoked meat 4 times and more per week. 60.33% examinees associate salt with kidney diseases, with hypertension, heart diseases, thyroid gland and diabetes. In general, it can be stated that the average quantity of salt per member of a family varies and that it decreases with the growth of a family, but is in either case higher then recommended by the WHO. This problem has to be addressed in the educationally, health educationally and research sense.

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Regionalna obilježja prehrane u Hrvatskoj

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Mnoga epidemiološka istraživanja ukazuju na povezanost prehrane s visokim sadržajem soli, odnosno natrija i hipertenzije, a time i povećani rizik za nastanak kardiovaskularnih bolesti.

Cilj: Istražiti prehrambene navike i utvrditi regionalne razlike prehrane u Hrvatskoj. Temeljem dobivenih rezultata odrediti koje su regije s najvećim rizikom za razvoj hipertenzije.

Ispitanici i metode: Ispitivanje je provedeno tijekom 2003. godine primjenom izmijenjenog upitnika o potrošnji namirnica (Hrvatska zdravstvena anketa-HZA 2003) na uzorku od 9070 odraslih osoba u dobi ≥ 18 godina. Ispitivanje je provedeno u šest regija: gorska, istočna, jadranska, sjeverna i središnja Hrvatska te grad Zagreb. Kriterij za određivanje rizika u prehrani definiran je prisutnošću bar jedne od varijabli: dodavanje soli u jelo bez prethodnog kušanja, svakodnevno konzumiranje suhomesnatih proizvoda i značajna potrošnja kruha (≥ 4 kriške). Rezultati kvalitativnih varijabli su prikazani su frekvencijama. U obradi podataka koristila se programska podrška SAS 9.1 (SAS Institute Inc., Cary, NC, USA) te GISDATA ArcGIS 9 za izradu karte.

Rezultati: Analizom prehrambenih navika stanovništva Hrvatske utvrđene su razlike u prehrani ispitivanih regija. Najveći broj ispitanika ($> 12,3\%$) dodaje sol u jelo bez prethodnog kušanja u gorskoj i istočnoj regiji, slijedi grad Zagreb (10,3%), a najmanji broj ispitanika (8,4%) koji su prijavili ovakav obrazac ponašanja zabilježen je u sjevernoj regiji. Najveća incidencija konzumiranja suhomesnatih proizvoda je u gorskoj (30,7%) i istočnoj (26,5%), a najmanja u sjevernoj regiji (15,6%). Najčešće se konzumira pšenični kruh, od 65% (grad Zagreb) do 90,5% (gorska regija). Pri tome je najveća dnevna potrošnja kruha (≥ 4 kriške) zabilježena u jadranskoj regiji (58,7% muškaraca i 28,3% žena). Sve te namirnice sadrže dosta soli, odnosno natrija te predstavljaju rizične čimbenike za razvoj hipertenzije. Grupiranjem tih namirnica kao rizičnih čimbenika utvrđeno je da populacija istočne regije ima najveći rizik za razvoj hipertenzije, slijedi gorska regija, a najmanji rizik ima sjeverna (Slika 1). Ispitanici gorske, a posebice istočne regije pokazuju i druge nezdrave navike u prehrani: češće upotrebljavaju masnoće životinjskog porijekla, rijetko ili samo povremeno jedu povrće i voće, češće konzumiraju kolače i slastice, piju veće količine kave u odnosu na populaciju ostalih regija.

Zaključak: Značajna učestalost konzumacije soli u prehrani kao i namirnica bogatim natrijem u našoj populaciji ukazuje na potrebu trajne promidžbe pravilne prehrane kao i prosvjećivanje i obrazovanje cjelokupne populacije potrošača.

Slika 1: Prehrana kao rizični čimbenik za razvoj hipertenzije u regijama RH



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Regional features of Croatian nutrition

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A number of epidemiologic studies have pointed towards the association between high dietary salt content, i.e. high dietary sodium content, and hypertension, followed by the increase in cardiovascular risk encountered among consumers.

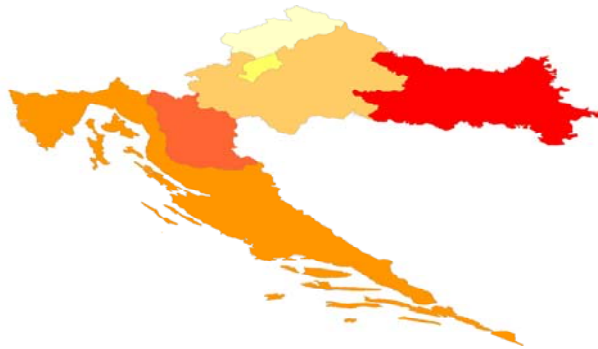
Aim: To investigate dietary habits and assess pertinent regional differences observed in different parts of the Republic of Croatia. Based on the results of the aforementioned, the identification of geographical regions whose inhabitants are at highest risk of developing hypertension had been attempted as well.

Subjects and methods: The investigation was carried out in 2003, using a modified food consumption questionnaire (Croatian Health Survey – CHS 2003), and comprised a total of 9070 adults aged ≥ 18 . Within this frame, six regions had been put under investigation: the mountain, the eastern, the Adriatic coastal, the northern, and the central Croatia, as well as the City of Zagreb. The criterion employed to the goal of establishing diet-associated risks, was defined by the presence of at least one of the following variables: salting the food without tasting it first, regular consumption of dried meat products, and significant bread consumption (≥ 4 slices). The results pertinent to the qualitative variables are displayed in terms of frequencies. Data were processed using the SAS 9.1 software (SAS Institute Inc., Cary, NC, USA) and GISDATA ArcGIS 9, utilised to the goal of map plotting.

Results: The analysis of dietary habits of Croatian population had revealed the differences in nutrition patterns customary for the investigated regions. The greatest number of examinees ($> 12.3\%$) in custom of adding salt in their food without tasting it first, is hosted by the mountain and the eastern Croatian regions, followed by the City of Zagreb (10.3%), while the lowest number of examinees allegedly observing such a dietary pattern occupies the northern region. The highest incidence of dried meat products consumption had been encountered in the mountain (30.7%) and the eastern (26.5%) regions, while the lowest one had been observed in the northern region (15.6%). The most frequently consumed type of bread is the wheat one, with the frequency of its consumption ranging from 65% (the City of Zagreb) to 90.5% (the mountain region). The most abundant daily bread consumption (≥ 4 slices) had thereby been encountered in the Adriatic coastal region (58.7% of men and 28.3% of women). All of the foodstuffs in reference contain a substantial amount of salt, i.e. sodium, and therefore pose as the risk factors predisposing for the hypertension development. Grouping of these foodstuffs based on the degree of cardiovascular risk they stand for, had revealed that the population inhabiting the eastern Croatian region is in the highest risk of developing hypertension; the "first runner up" is the population of the mountain region, while the population of the northern Croatia is placed in the lowest-levelled risk group (Figure 1). On the top of that, the examinees coming from the mountain, and particularly those coming from the eastern region, observe also other unhealthy dietary patterns in terms of more frequent animal fat consumption, rare or only sporadic vegetable and fruit intake, more frequent cookies' and sweets' consumption, and more substantial coffee intake as compared to the remainder of investigated regions.

Conclusion: Substantial consumption of salt and sodium-rich foodstuffs, typical of the nutrition exercised in our population, imposes the need for continuous promotion of healthy diet, as well as for the health promotion and education of the entire consumer population.

Figure 1: Nutritionally-driven development of hypertension, to be expected in various Croatian geographic regions



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Prehrambena industrija - utjecaj soli na potrošače

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Sol ili natrijev klorid je prehrambeni mineral koji se sastoji od 40 % natrija i 60 % klorida. Ioni Na⁺ su glavni elektroliti u organizmu i imaju ključnu ulogu u fiziološkim procesima od održanja krvnog tlaka do održanja rada živčanog sustava.

Tisućama godina sol se koristila za čuvanje hrane i poboljšanje njenoga okusa. Danas se sol koristi kao začim, konzervans, agens za održavanje boje, teksture i u svrhu reguliranja fermentacije zaustavljajući rast bakterija, kvasaca i plijesni. Osim kuhinjske soli, u raznim tehnološkim procesima pripreme industrijski procesirane hrane, polugotovih obroka i pripravaka upotrebljavaju se i druge vrste soli koje također sadrže natrij: natrij-nitrati, natrij-fosfati i natrij-glutamati. Soljenjem se smanjuje sadržaj vode u hrani, što ima za posljedicu usporavanje rasta bakterija, njihovo sporuliranje ili ugibanje. Koncentracija soli iznad 10% usporava razvoj većine mikroorganizama, jer samo relativno malen broj, tzv. halofilni mikroorganizmi rastu u hrani pri koncentraciji soli od 15-20% [1].

Uobičajeni unos natrija je visok, premašuje količine potrebne za normalno funkcioniranje, a ovisi o individualnim prehrambenim navikama. Najčešće, 10% ukupnog dnevnog unosa soli potječe od namirnica koje prirodno sadrže sol. Količina natrija u prirodnim namirnicama kreće se od 2.3 do 69mg/100g (jaja, meso i riba sadrže 69mg/100g, voće 2.3mg/100g, te povrće 6,9mg/100g). Naknadnim dosoljavanjem (Dodatnim soljenjem) hrane tijekom pripremanja i konzumacije hrane unosi se oko 15-20% ukupno unesene soli. Najviše soli, 70-75%, unosi se industrijski procesiranom hranom koju, na žalost, zbog načina života koristimo sve više. U tako pripremljenoj hrani bogatoj natrijem ističu se kruh: 460mg/100g; različite vrste sireva 36-2900mg/100g; slanina 1840mg/100g, slane grickalice 349-512mg/100g, mrvice 760-1980mg/100g dimljeno i prerađeno meso 1250-270mg/100g, razni umaci 888-910mg/100g, sok od pečenja 468-8143 mg/100g, gotove juhe 228-922 mg/100g, sušene masline 1472-2070mg/100g, chips 349-512mg/100g, sušenoj ribi (haringi, tune, inćuni i srdela) 500-1509mg/100g, ukiseljeno povrće 620mg/100g, kvasac 50-170mg/100g, majoneza 700-800mg/100g, sendviči 2000mg/100g, pizza 1500mg/100g-3000mg/200g. Vode za piće također se razlikuju po sadržaju natrija [2]. Meke vode sadrže više natrija od tvrdih. Sadržaj natrija u mineralnim negaziranim vodama varira od 2.2 do 168mg/l, dok se u gaziranim mineralnim vodama kreće od 123 do 1500mg/l.

Preporuke za dnevni unos soli razlikuju se ovisno o dobnim skupinama i zdravstvenom statusu pojedinaca. Donedavno, preporučena gornja granica dnevnog unosa soli za odrasle osobe iznosila je 9g. WHO i FAO preporučuju ograničavanje dnevnog unosa soli na manje od 5g dnevno (2g natrija) [3]. U Republici Hrvatskoj pokrenuta je Nacionalna kampanja za smanjenje unosa kuhinjske soli [4]. Radi primjerene zaštite potrošača, proizvođači prehrambene industrije još uvijek nezainteresirani da ograniče dodavanje soli svojim proizvodima, koriste sve više novu proizvedenu mineralnu sol koja sadrži 50% manje natrija.

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Food industry – attack of salt on the consumer

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Salt or sodium chloride is a dietary mineral composed of 40% of sodium and 60% of chloride. Na⁺ ions are main electrolytes in organism with key role in maintaining the blood pressure and nervous system.

For thousands of years salt has been used for food preserving and for improve their taste. Today it is used as spice, food preserves, additive in colors maintain, and in fermentation process stopping the yeast growth. Besides kitchen salt, in different technological processes of preparing industrial meals other kinds of salt are used such as: sodium-nitrate, sodium-phosphate, and sodium-glutamate. Adding salt results in reducing water in food, what consequently slowing down the growth of bacteria or rising their mortality. Salt concentration beyond the 10% is the reason of slowing down development of most microorganisms. This is because relatively small numbers of microorganisms (halofilni) are growing in food which salt concentrations are from 15-20% [1].

Salt quantities we are using in our daily consumption are high, they are beyond the quantities we need for normal functioning, and they depend on individual dietary habits. Generally, 10% from total daily consumption is from foodstuffs that consisted salt in their origin. Sodium quantities in natural foodstuffs are among 2,3 and 69mg/100g (eggs, meat and fish 69mg/100g, fruit 2,3mg/100g, vegetables 6,9mg/100g). Additional salt (15-20%) in our daily consumption derived from using it during the cooking process or meal consumption. The most part of daily taken salt (70-75%) is from industrial food, which we, unfortunately, consume more and more because of our lifestyle. Among such prepared meals reach in sodium are: bread 460mg/100g; different kind of cheeses 36 do 2900mg/100g; bacon 1840mg/100g, salted snacks 349-512mg/100g, smoked meat, different sauces 888-910mg/100g, sauce of roast meat 468-8143mg/100g, package soups 228-922mg/100g, dried olives 1472-2070mg/100g, stock cubes, chips 349 – 512mg/100g, smoked fish 500-1509mg/100g, pickles 620mg/100g, yeast extract 50-170mg/100g, mayonnaise 700-800mg/100g, sandwiches 2000mg/100g, pizza 1500mg/100g – 3000mg/200g. Drinking waters differ also based on sodium contents [2]. Soft waters content more sodium than hard waters. Sodium content in mineral non-carbonated waters varies from 2.2 to 168mg/l; while in carbonated mineral waters vary from 123 to 1500mg/l.

Recommendations for daily salt intake differ regarding to the age and health status of individuals. Recently, recommended upper limit of daily salt intake was, for adults, 9g. WHO and FAO recommend restriction of upper limit of daily salt intake on 5g and less (2g of sodium) [3]. In Republic of Croatia National campaign of reducing the daily kitchen salt intake is started [4]. Regarding the appropriate consumers protection, manufacturers from food industry, still uninterested in cutting down the salt quantities in their products, are using the newly produced mineral salt with 50% less sodium.

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Smanjenje unosa soli – od informacije do ponašanja

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Sol je esencijalni mineral. Ona je najstariji začim i "konzervans". Okus slanog je jedan od četiriju osnovnih gustatornih osjeta, uz slatko, kiselo i gorko. Sol se višekratno spominje u Bibliji, služila je kao plaća rimskim vojnicima, zbog nje su se vodile bitke i gradili putevi soli. U izrekama prevladava pozitivna konotacija – npr. "sol života", "sa znom soli", "imati soli u glavi".

Danas je znanstveno dokazano da pretjeran unos soli negativno utječe na zdravlje, prvenstveno na kardiovaskularni sustav u smislu povećanja krvnog tlaka. Istraživanja pokazuju da većina ljudi u zapadnoj civilizaciji svakodnevno u organizam unosi previše soli. Preporuka za smanjenje unosa soli sastavni je element svih naputaka o zdravoj prehrani. Preporučena ukupna dnevna količina soli za odraslu zdravu osobu je jedna čajna žličica ili 6 grama dnevno (2.400 mg Na), a prosječno se troši dvostruko više.

Napori za smanjenje unosa soli trebali bi se usmjeriti i na društvo (industriju, restorane, kućanstva) i na pojedinca. Na individualnoj razini, prema Transteoretskom modelu promjene ponašanja, promjena će se odvijati kroz pet faza: prekontemplaciju, kontemplaciju, pripremu, akciju i održavanje. Brzina promjene ponašanja i put prolaženja kroz faze individualan je. Najčešće nije linearan nego se odvija kroz regresiju u fazama. Značajan utjecaj na promjenu ponašanja imaju navike, socijalna sredina, samoefikasnost i samokontrola.

Kako bi se bolesnicima olakšala promjena ponašanja u smislu smanjenog unosa soli potrebno je prepoznati fazu promjene u kojoj se osoba nalazi, identificirati specifične potrebe i poteškoće u toj fazi i planski intervenirati odgovarajućim preporukama.

Istraživanja su pokazala da je osnovna poteškoća u promjenama ponašanja pretvaranje motivacije u akciju/ponašanje, a jedna je od najčešćih pogrešaka nedovoljna priprema za novo ponašanje.

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Reduction of salt intake– from information to behaviour

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Salt is an essential mineral. It is the oldest food spice and it has been used for food preservation. Salt flavour is one of the four basic tastes together with sweetness, sourness and bitterness. Salt was mentioned several times in the Bible, the payment for soldiers in the Roman army was a certain amount of salt, wars were started and routes were built for the transport of salt. In proverbs salt has a positive connotation – e.g. the salt of the earth, with a pinch of salt.

Nowadays, it has been proven that excessive intake of salt can have a negative effect on health, primarily on the cardiovascular system by increasing blood pressure. Studies have shown that the majority of people in the western populations take too much salt every day. Recommendations for the reduction of salt intake are present in all instructions on healthy diet. The recommended daily amount of salt for the adult healthy individual is one tea spoonful or 6 grams (2.400 mg Na) per day and the average intake is twice as high.

Efforts to reduce the salt intake should be directed towards the society (industry, restaurants, households) and the individual. In accordance with the Transtheoretical Model of behaviour change five stages are identified at the individual level: precontemplation, contemplation, preparation, action and maintenance. The speed of change of behaviour is individual. It is mostly not linear but goes through regression in phases. Important effects on the change of behaviour are habits, social environment, self-efficacy and self-control. In order to make the change of behaviour easier concerning the reduced intake of salt, it is important to recognize the stage of change in which the individuals find themselves, to identify specific needs and problems at this stage and plan the intervention with adequate recommendations.

Studies have shown that the main problem in behaviour change is to turn motivation into action/behaviour, and the most common mistake is insufficient preparation for the new behaviour.

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Cerebrovaskularne bolesti– prehrana i sol

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Sol je jedan od naših osnovnih okusa i najpopularniji začim hrani. U Kini je upotrebljavana kao konzervans prije više od 6000 godina. Sol je prehrambeni mineral primarno sastavljen od natrij-klorida, iona koji su nužni za preživljenje svih živih stvorenja, uključujući i ljude. Sol ima značajnu ulogu u očuvanju ravnoteže tekućine u tijelu. Iako je neophodna za opstanak životinjskog svijeta, škodljiva je za većinu kopnenog bilja. Prekomjerna konzumacija soli povećava rizik od nastanka zdravstvenih problema, posebno hipertenzije. Provedena istraživanja povezuju višak soli sa zdravstvenim problemima poput žgaravice, osteoporoze, želučanog ulkusa i karcinoma, hipertrofije lijevog ventrikula, te mnogim drugim.

2005. godine, Svjetska Zdravstvena Organizacija (WHO) je kao globalni cilj postavila redukciju stope smrtnosti od kroničnih bolesti za dodatna 2% godišnje. U tu svrhu su istražili koliko bi smrtnih ishoda bilo moguće spriječiti kroz 10 godina uz implementaciju populacijskih intervencija. Većina spriječenih smrtnih ishoda pripadala bi skupini kardiovaskularnih bolesti (75,6%).

Svima nam je dobro poznato da je moždani udar jedan od vodećih uzroka smrtnosti i invaliditeta u Hrvatskoj. Sol ima najznačajniji učinak na krvni tlak, koji je važan čimbenik rizika za nastanak moždanog udara na koji možemo utjecati. WHO upućuje na dvije meta-analize kontroliranih studija koje su proučavale dugoročne učinke redukcije soli kod osoba s hipertenzijom i bez hipertenzije. Obje studije su pokazale da umjerena redukcija unosa soli (2-2,6g/d) može malo, ali značajno reducirati apsolutne vrijednosti sistoločkog tlaka.

Teret kroničnih bolesti može se reducirati dobrovoljnom redukcijom unosa soli u domaćinstvu, ali i redukcijom udjela soli u prehranbenim prerađevinama. Kao rezultat toga, 2007. godine, Svjetska Zdravstvena Organizacija je izdala priručnik za prevenciju kardiovaskularnih bolesti-smjernice za procjenu i zbrinjavanje kardiovaskularnog rizika. Ove preporuke predlažu poticanje svih ljudi na redukciju dnevnog unosa soli najmanje za jednu trećinu, te ako je moguće, na količinu manju od 5g ili 90mmol na dan. Ovo predstavlja preporuke SZO za prevenciju ponavljajućih kroničnih srčanih bolesti (srčanih udara) i cerebrovaskularnih zbivanja (moždanih udara).

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Cerebrovascular diseases – diet and salt

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Salt is one of our basic tastes and it is the most popular food seasoning. Usage of salt dates over 6000 years ago, in China, where it was used as food preservative. It is a dietary mineral composed primarily of sodium chloride, ions which are necessary for survival of all living creatures, including humans. Salt has an important role in maintaining fluid balance of the body. While it is essential for animal life, it is toxic to most land plants. On the other hand, over consumption of salt increases the risk of health problems, especially hypertension. Studies have linked excess salt consumption with many other health problems: heartburn, osteoporosis, gastric ulcers, and cancer, left ventricular hypertrophy are just a few examples.

In 2005, WHO set a global goal to reduce rates of death from chronic disease by additional 2% every year. Therefore, they investigated how many deaths could be averted over 10 years by implementing population based interventions. Most deaths averted would be from cardiovascular diseases (75.6%).

We are well aware of stroke being one of leading causes of death and disability in Croatia. Salt mainly effects levels of blood pressure, which is an important modifiable risk factor for stroke. WHO addressed two meta-analyses of controlled trials that examined long-term effects of salt reduction in people with and without hypertension. Both studies showed that moderate reductions in salt intake (2-2.6g/d) can reduce absolute systolic blood pressure by small but important amount.

The burden of chronic disease could be reduced by a voluntary reduction within households as well as reduction in the salt content of processed foods by manufacturers. As a result, in 2007, World Health Organization (WHO) published a manual-Prevention of Cardiovascular Diseases, Guidelines for Assessment and Management of Cardiovascular Risk. These Guidelines suggest that all individuals should be strongly encouraged to reduce daily salt intake by at least one third and, if possible, to less than 5g or less than 90mmol per day. This represents WHO Recommendations for prevention of recurrent chronic heart disease (heart attacks) and cerebrovascular events (strokes).

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Rak – prehrana i sol

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Vrlo slana hrana, osim što je rizicni cimbenik za KVB ima i drugih nepovoljnih učinaka na zdravlje: rak zeluca i neke druge vrste raka, debljinu (rizicni cimbenik za mnoga sijela raka), Menierovu bolest, pogorsanje bubrezne bolesti, pokretanje napada astme, osteoporoze, pogorsanje retencije tekucine, bubrezne kamence. Prehrana koja sadrži velike količine soljene i salamurene hrane povećava rizik za rak zeluca, nosa i grla. Malo dokaza pak sugerira da umjerena količina soli ili salamurene hrane utječe na rizik za rak (Americko društvo za rak).

Posto je rak zeluca u nekim zemljama (posebice u Japanu) još uvijek među najčescim sijelima raka njegova je prevencija je jedna od najznacajnijih aspekata strategije u kontroli raka. Zapazanja temeljena na zemljopisnim razlikama kod japanskih imigranata u SAD-u i Brazilu, trendovi incidencije tijekom vremena i promjene u incidenciji ukazuju na to da je rak zeluca usko povezan s prehranom, unosom soli i slane hrane. [1] I rezultati mnogih epidemioloskih istrazivanja ukazuju na to da je visoki unos soli u hrani znacajni rizicni cimbenik za rak zeluca i da je ta povezanost vrlo znacajna u prisustvu infekcije s *Helicobacterom pylori* s atrofincim gastritisom. Visoki unos soli skida površni sloj zeluca i olaksava infekciju s *H. pylori* ili može infekciju pogorsati. Soljenje, salamurenje, kiseljenje i dimljenje su terdicionalno popularni načini pripreme hrane u Japanu. Dodatno unosu slane i dimljene hrane mala konzumacija voca i povrca povećava rizik za rak zeluca. Ali mi ne znamo je li sol u toj hrani specifični uzrok ili je to kombinacija soli i drugih kemikalija. [2] Tako je jedno od istrazivanja identificiralo mutagen u japanskoj slanoj ribi tretiranoj s nitritima, kemijska struktura tog mutagena ukazuje da dolazi od metionina, a sol i nitriti su prekursori njegovog formiranja.

Rad u uvjetima toplinskog stresa znacajno povećava izlucivanje soli kod radnika znojenjem. Radnici koji rade pod tim uvjetima dnevno konzumiraju od 13 do 38 gr soli. Posto sol znacajno pojačava i promovira kemijsku gastricnu kacinogenezu i infekciju s *H. pylori* u ljudi i u zivotinja, možemo govoriti o povezanosti između takve vrste rada, uzimanja soli i razvoja raka zeluca. [3]

Smanjenje unosa soli, posebice tijekom trudnoce, reducira rizik za rak dojke i mnoge druge bolesti, kao i za smanjenje debljine. Smanjenje tjelesne tezine pak smanjuje rizik za mnoge vrste raka.

Zemljopisni podaci i analize podataka ukazuju da sol koja se sipa zimi na cestama može možda biti povezana s povećanim mortalitetom od raka dojke, pluca, grla, grkljana, debelog crijeva, rektuma i mokracnog mjehura. Ipak nemamo još dovoljno raspolozivih podataka o ucinku takve sipane soli na zdravlje. Uzročnost i učinci povezanosti ne mogu se stoga utvrditi bez daljnjih istrazivanja. [4]

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Cancer - diet and salt

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A high salt intake, besides to CVD, causes other adverse effects on health: gastric and some other cancers, obesity (risk factor for many cancer sites), Meniere's disease, worsening of renal disease, triggering an asthma attack, osteoporosis, exacerbation of fluid retention, kidney stones. Diets containing large amounts of food preserved by salting and pickling are related to increased risk of cancers of the stomach, nose and throat. Little evidence suggest that moderate amounts of salt or salt-preserved foods in the diet affect cancer risk (American Cancer Society).

Because gastric cancer is still the most common cancer in some countries (especially in Japan) its prevention in one of the most important aspects of cancer control strategy. Observations among Japanese immigrants in the USA and Brazil based on the geographic differences, the trend in cancer incidence with time, and the change in incidence patterns indicate that gastric cancer is closely associated with dietary factors, such as the intake of salt and salted food.[1] And findings from many epidemiological studies suggest that high dietary salt intake is a significant risk factor for gastric cancer and this association was found to be strong in the presence of *Helicobacter pylori* infection with atrophic gastritis. A high-salt intake strips the lining of the stomach and may make infection with *H. pylori* more likely or may exacerbate infection. Salting, pickling and smoking are traditionally popular ways of preparing food in Japan. In addition to salt intake smoking and low consumption of fruit and vegetables increases the risk of stomach cancer. But we don't know is whether it is specifically the salt in these foods that can cause cancer or combination of salt and other chemicals. [2] One research has identified a mutagen in nitrite-treated Japanese salted fish, and chemical structure of this mutagen suggests that it is derived from methionine and that salt and nitrite are precursors for its formation.

Working under conditions of heat stress greatly increases a worker's salt excretion through sweating. Workers exposed to heat stress had consumed daily as much as from 13 to 38 g of salt. Because salt strongly enhances and promotes chemical gastric carcinogenesis and *H. Pylori* infection in both humans and animals, there is an association between work, salt intake, and development of stomach cancer.[3] Reducing salt intake, especially during pregnancy, also reduces the risk of developing breast cancer and many other diseases, as well as reducing obesity. Lose weight reduce risk of most cancers.

The geographical data and analyses currently available suggests that road salt (put down to highways over the winter) may be associated with elevated mortality from cancer of the breast, lung, esophagus, throat, larynx, large intestine, rectum and bladder. There is no available literature on the health impacts of road salt. Cause and effect relationships cannot be established without further study. [4]

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Sol i hipertenzija

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U svim smjernicama za liječenje arterijske hipertenzije početak liječenja hipertoničara je uz edukaciju bolesnika rezerviran za promjene loših životnih navika gdje smanjen unos kuhinjske soli ima primarno mjesto. No, ne samo početak nego i trajno tijekom medikamentnog liječenja naglašava se, ili bi se morala, važnost smanjenja unosa soli. Ti podaci jedan su od čvrstih pokazatelja koliko važnost ima unos kuhinjske soli na arterijski tlak, nastanak arterijske hipertenzije, te uspješnost kontrole hipertoničara i što je najvažnije ustrajnost u održavanju postignutoga.

Brojne su epidemiološke studije, od kojih je najpoznatija i najznačajnija *Intersalt* studija, pokazale kako arterijski tlak raste s porastom unosa kuhinjske soli. Uspoređujući razne populacije uočeno je kako arterijski tlak raste starenjem značajno izrazitije u onih populacija koje unose više kuhinjske soli u odnosu na one s manjim unosom soli. Prekomjeren unos kuhinjske soli i neovisno o učinku na arterijski tlak dovodi do hipertrofije lijeve klijetke i albuminurije što neovisno povećava ukupni kardiovaskularni rizik. Više je studija, od kojih je najcitiranija *DASH* studija pokazalo kako smanjen unos kuhinjske soli dovodi do snižavanja arterijskoga tlaka. Dugo vremena nije bilo odgovoreno na pitanje je li postignuto sniženje arterijskoga tlaka redukcijom unosa soli povezano i sa smanjivanjem kardiovaskularne pobola i smrtnosti. Odgovor na to, i rješenje svih tih dilema dao je nastavak *TOHP* studije u kojoj je praćen učinak redukcije kuhinjske soli na dugogodišnji kardiovaskularni pobol i smrtnost. Uočeno je kako i malo smanjenje unosa kuhinjske soli od oko 3 g NaCl dovodi do 25% smanjenja kardiovaskularne smrtnosti i nakon perioda praćenja od 15 godina.

Danas se zna kako nisu sve osobe sol osjetljive, tj. kako do porasta arterijskoga tlaka dolazi u dijela populacije, dok kod drugih ne dolazi do porasta arterijskoga tlaka uz povećan unos kuhinjske soli. Razni mehanizmi mogu dovoditi do sol-osjetljivosti, no ono što je važno za buduća planiranja jest činjenica kako je hipertenzija sol osjetljiva u starijih osoba, u bolesnika s metaboličkim sindromom, sa šećernom bolesti, i onih s bubrežnom lezijom, dakle u onim subpopulacijama koje zadnjih godina postaju sve brojnije ne samo u razvijenom svijetu što baš nije optimističan znak. S druge strane to ukazuje na važnost energičnog primjenjivanja mjera primarne prevencije počevši s edukacijom populacije, ali i uključivanja svih relevantnih čimbenika društva. Budući da povećan unos kuhinjske soli i neovisno o učinku na arterijski tlak povećava kardiovaskularni rizik mjere smanjivanja unosa treba preporučiti svima neovisno je li njihova hipertenzija sol osjetljiva ili nije.

Salt and Hypertension

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In all guidelines for management of hypertension, treatment begins with patients' education to change their way of life and the bad habits in which reduction of salt intake is very important. This advice should be followed from the beginning through to the end of drug treatment. Reduction of salt intake in the immediate and in the long-term is one of the most significant variables for arterial blood pressure, development of hypertension, success in blood control.

Numerous epidemiological studies, amongst which the most well known and important is the *Intersalt* study, have shown that arterial blood pressure rises with increased salt intake. Comparisons of different populations have shown that arterial blood pressure rises with age significantly more in populations whose salt intake is greater. Excessive salt intake will, independently of blood pressure, lead to left ventricular hypertrophy and *albuminuria*, which itself increases the total cardiovascular risk. Many studies, among which the most cited is the *DASH* study, have shown that reduction of salt intake lowers blood pressure. For a long time there was no answer whether lowering of blood pressure by reduction of salt intake results in a decrease of cardiovascular morbidity and mortality. The TOHP study, which studied the effect of salt reduction on cardiovascular morbidity and mortality, gave the answer and solved all the dilemmas. It showed that even a small reduction in salt intake of 3 g NaCl results in 25% reduction of cardiovascular mortality after a follow-up of 15 years.

It is well known today that not all people are sensitive to salt. In part of the population with an increased salt intake there is an increase of blood pressure and in other parts there is none. There are different mechanisms which lead to salt-sensitivity. However, for future planning it is important to note that hypertension is salt-sensitive in the following groups; in the elderly, in patients with metabolic syndrome, in diabetics and those with renal lesions. These are all groups which have lately become more and more numerous in the developed world. This increases the need for primary prevention, starting with education of the public, and engaging all the relevant elements in society.

As increased salt intake is an independent cardiovascular risk factor, measures of salt reduction should be recommended to all regardless of whether their hypertension is salt-sensitive or not.

Utjecaj dijete i unosa soli na razvoj hipertenzije u djece i adolescenata

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Arterijska hipertenzija (AH) predstavlja glavni rizični faktor za nastanak kardiovaskularnih i cerebrovaskularnih bolesti i bolesti bubrega.

Uobičajeno je mišljenje, čak i među liječnicima, da je AH u djece rijetka i da je uglavnom sekundarno uvjetovana, najčešće zbog bolesti bubrega. Ova tvrdnja vrijedi za novorođenčad, dojenčad i predškolsku djecu. U stvarnosti hipertenzija u djece uvjetovana bolestima bubrega mnogo je rjeđa nego primarna hipertenzija (PH). U školskom uzrastu, a pogotovu kod adolescenata, hipertenzija je većinom primarnog (esencijalnog) karaktera. U adolescenata, naročito onih bližih dvadesetim godinama učestalost esencijalne hipertenzije se približava učestalosti u odraslih i predstavlja (poslije astme), po učestalosti drugu kroničnu bolest djetinjstva i adolescentne dobi. Učestalost hipertenzije u djece je vrlo raznolika i kreće se prema raznim autorima od 1 pa čak i do 22 %. Rezultati nedavno provedenog EH-UH istraživanja u Hrvatskoj pokazuju da je učestalost hipertenzije u odraslih 37,5% [1]. Jasno je da povišeni krvni tlak nije počeo u 18. godini života nego mnogo prije.

Svjedoci smo globalne epidemije prehranjenosti. Na žalost i Hrvatska je zahvaćena tom epidemijom. Prema podacima Svjetske zdravstvene organizacije iz 2003. godine u Hrvatskoj živi 61,4% ljudi, uzrasta od 18-100 godina, s ITM >25kg/m² [2]. Povezanost debljine i hipertenzije uočena je već 1924. godine. Rizik za nastanak hipertenzije u djece s povećanom tjelesnom masom je 3 do 5 puta veći nego u djece normalne tjelesne mase [3].

Mnogobrojni radovi upozoravaju na štetnost prekomjernog uzimanja soli putem hrane (posebno konzervirane) i gaziranih pića. Studija provedena na djeci uzrasta od 4-18 godina je pokazala da povećano unošenje soli za 1 gram dnevno dovodi povišenja sistoličkog krvnog tlaka za 0,4 mmHg i povišenja tlaka pulsa za 0,6 mmHg [4]. Preporučene količina kuhinjske soli za odrasle je manje od 6 grama dnevno. Kod djece za svaki uzrast preporučena je duga količina soli. U Hrvatskoj je već godinama, a na inicijativu Hrvatskog pedijatrijskog društva, snažna kampanja za promicanje dojenja. Majčino mlijeko omogućava dojenčadi, uz optimalnu količinu drugih sastojaka i adekvatnu količinu soli. Od prošle godine su u Hrvatskoj na snazi službene preporuke Ministarstva zdravstva za prehranu djece uzrasta od 1 do 6 godina, koje se provode u dječjim vrtićima. Nadamo se da će kampanja „Manje soli više zdravlja“ koja je se provodi u Hrvatskoj senzibilizirati stanovnike da brinu o svome zdravlju i da kontroliraju koliko soli unose.

U zaključku treba reći da hipertenzija uz druge faktore rizika kao što je nezdrava prehrana s unošenjem previše (nekvalitetnih) kalorija i previše soli u dječjem uzrastu pridonosi većem pobolijevanju i smrtnosti od kardiovaskularnih bolesti u odrasloj dobi. Preventivne mjere moraju biti poduzete u ranoj dječjoj dobi. Za to je potreban angažman kako stručnjaka u određenim područjima, tako i angažman šire društvene zajednice.

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Effect of diet and salt intake on the development of hypertension in children and adolescents

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Arterial hypertension (AH) is a major risk factor for cardiovascular, cerebrovascular and renal disease.

The common opinion, even among physicians is that AH in children is rare, and that it is mainly caused by kidney disease. This is true only for infants and small children. Essential hypertension (EH) is not so rare in school children and adolescents. Prevalence of EH in adolescents, particularly those near their twenties is very near/close to those of the adults. According to prevalence, EH is the second (after asthma) chronic disease of the childhood. The results of EH-UH study on arterial hypertension in Croatia showed the prevalence of hypertension of 37.5% for adults [1]. It is logical to presume that hypertension does not begin at the age of 18, and that its origin is in the younger age.

We are the witness of global epidemic of overweight/obesity (OW/OB). According to WHO report for year 2003 in Croatia the prevalence of OW/OB is 61.4% for person aged 18-100 years [2]. There is a direct relationship between overweight/obesity (OW/OB) and childhood EH. Body mass index is greater in children with EH than in those with secondary hypertension. The risk for onset of hypertension is three to five times more common in OW/OB children [3].

According to a British study the increase of 1 g salt intake in children is associated with 0.4 mmHg rise in systolic blood pressure and 0.6 mmHg rise in pulse pressure [4].

Prevention of cardiovascular disease begins in early childhood, through education of people in healthy lifestyle which includes prevention of OW/OB, lesser salt ingestion and more physical activity.

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Prehrana i skrivena sol u prehrani školske djece - čimbenici rizika za srčanožilne bolesti

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Prepoznavanje čimbenika rizika za srčanožilne bolesti dječjoj dobi jedan je od temeljnih ciljeva prevencije srčanožilnih bolesti u odrasloj dobi.

Cilj: Procijeniti postoje li razlike u prehranbenim i životnim navikama između učenika prvog razreda osnovne škole koji su primjereno uhranjeni i prekomjerno uhranjenih i adipoznih.

Ispitanici: Ispitanici su bili učenici iz 40 osnovnih škola. Uzorak je reprezentativan za Hrvatsku, a škole su stratificirane prema veličini – broju učenika u školi. Istraživanjem je obuhvaćeno 960 učenika, 493 (52,4%) dječaka i 467 (48,6%) djevojčica.

Metode: Anonimni upitnik (ispunjavali su roditelji učenika) imao je 75 pitanja o: prehranbenim navikama, uporabi kompjutera i interneta, gledanju televizije, zdravstvenom statusu, školskoj spremi roditelja, a izvršena su i antropometrijska mjerenja, tjelesna masa, tjelesna visina, određen indeks tjelesne mase (ITM, kg/m²). U statističkoj analizi korištene su metode deskriptivne statistike, faktorska i diskriminacijska analiza. Za procjenu tjelesne uhranjenosti korišteni su «Cole standards» [1] te su temeljem tih kriterija ispitanici su podijeljeni u tri grupe: grupa 1 – uredno uhranjeni, grupa 2 – prekomjerno uhranjeni i grupa 3 adipozni.

Rezultati: Prekomjerno uhranjenih je 127 (13,2%) i adipoznih 73 (7,6%) djevojčica i dječaka. Rezultati analize prehranbenih navika (broj obroka u danu, učestalost konzumacije mesa, mlijeka, voća, povrća, šećera, slatkiša i «brze hrane») pokazala je da prekomjerno uhranjeni i adipozni imaju manje obroka tijekom dana i jednu manje voća u odnosu na primjereno uhranjene. Prekomjerno uhranjeni i adipozni jednu «brzu hranu» pet i više puta tjedno, što je statistički značajna razlika u odnosu na primjereno uhranjene ($p=0,0009$), također provode više vremena za kompjuterom ($p=0,0039$). Nije bilo razlike među ispitanicima ove tri skupine u vremenu koje provode gledajući televiziju.

Faktorskom analizom dobiveno je dvanaest faktora koji nose opterećenje 60 % varijabilnosti promatrane pojave. Faktori su uvršteni u diskriminacijsku analizu. Kriterijska varijabla je bila ITM svakog ispitanika podijeljenih u tri navedene grupe. Dobivene su dvije diskriminacijske funkcije od kojih se 1. diskriminacijska funkcija pokazala statistički značajnom na razini $p=0.010$ ($\chi^2 = 42,890$ $df = 24$). Prva diskriminacijska funkcija je pretežno opisana s faktorom 3 Red rođenja i broj djece, faktor 2 Završena škola roditelja, faktorom 7 Konzumiranje voće i povrće, faktorom 12 Broj sati rada, faktorom 5 Fizička aktivnost, faktorom 11 Pijenje alkohola.

Zaključak: Djeca koja su uredno uhranjena su opisana sljedećim: većim brojem djece u obitelji i višim redom rođenja, nižim obrazovanjem roditelja, jednu više voća i povrća, manje sati provedu igrajući igrice na računalo, imaju više fizičkih aktivnosti, piju manje alkohola uz obrok. Prekomjerno uhranjena i adipozna djeca su opisana sljedećim: manjim brojem djece u obitelji i nižim redom rođenja, višim obrazovanjem roditelja, jednu manje voća i povrća, više sati provedu igrajući igrice na računalo, imaju manje fizičkih aktivnosti, piju više alkohola uz obrok.

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Nutrition and hidden salt content in school children meals – cardiovascular diseases risk factors

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Recognition of cardiovascular risk factors in childhood is elementary goal of cardiovascular diseases prevention in adults.

Goal: To determine nutritional and behavioral differences in obese, overweight and normal weight children attending first grade elementary school.

Participants: Children from 40 elementary schools. Sample was stratified by settlements population size, 960 pupils, 493 (52, 4%) boys and 467 (48, 6%) girls.

Methods: Anonymous questionnaire (completed by parents) with 75 questions: computer and internet use, television, eating and drinking habits, children's health status, parents education, height and weight – Body mass index (BMI). Statistic analysis: descriptive methods, factor analysis, factor discriminate analysis. Criteria for obese and overweight, BMI were 'Cole standards' [1]: Group 1 – normal weight, Group 2 - Overweight, Group 3 - Obese.

Results: Overweight are 127 (13, 2%) and obese are 73 (7, 6%) girls and boys. Questions regarding nutrition (meals number, fruits, vegetables, meat, milk, sugar, sweets, fast food consumption) showed that overweight and obese have less meals per day, eat less fruits. They eat fast food five and more times per week, which is statistic significant difference ($p=0,0009$), also they spend more time using computer, also statistic significant difference ($p=0,0039$), there is no such difference for TV viewing.

Factor analysis excluded 12 factors with cumulative loading of 60% variability. Factors were included in discriminative analysis. Criterion variable was BMI of each examinee sorted in three mentioned groups. We achieved two discriminative functions. In Function 1 of discriminate analysis, is defined with: factor 2 "Parents education", factor 3 "Order of birth and number of children in family", factor 5 "Physical activity", factor 7 "Fruit and vegetable", factor 11 "Alcohol", factor 12 "Time spent playing video and computer games", and make good discrimination between normal weight and over weight and obese children.

Conclusion: Normal weight children are described with: higher number of children in the family and higher order of birth, lower education of parents, they eat more vegetables and fruits, spend less time playing computer games, have more physical activity, drink less alcohol with their meals. Overweight and obese children are described with: lower number of children in the family and lower order of birth, higher education of parents, they eat less vegetables and fruits, spend more time playing computer games, have less physical activity and they drink more alcohol with their meals.

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Prehrana - rizični čimbenik za kardiovaskularne bolesti

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Geografskim položajem Hrvatske je i mediteranska zemlja, ali stopa smrtnosti od kardiovaskularnih bolesti (KVB) svrstava je među zemlje Centralne i Istočne Europe sa najvećom stopom kardiovaskularne smrtnosti (KVS)[1]. Svjetska udruga liječnika opće/obiteljske medicine (World Organization of National Colleges and Academies of Family Doctors -WONCA) sudjelovala je sa ostalim profesionalnim društvima 2007. godine u izradi smjernica Europskog kardiološkog društva (European Society of Cardiology - ESC) o prevenciji KVB, u kojoj prehrana ima izuzetnu ulogu. Prevencija KVB kroz promjene prehrambenih navika mora biti usmjerena kako prema populaciji sa javnozdravstvenim preporukama i programima tako i prema pojedincu[2]. Liječnik obiteljske medicine (LOM) skrbi za svakog čovjeka kao cjelovite osobe u njegovom okruženju, a uloga cijelog tima (medicinska sestra, patronažna sestra) u mijenjanju životnih navika je nezaobilazna. Intervencija LOM može biti okrenuta pojedincu, obitelji i grupi; putem verbalnog savjetovanja i/ili uz pomoću pisanog materijala; pojedinačni savjet ili organizirani program. Preporuke o promjeni životnih navika, pogotovo prehrambenih, pacijenti teško prihvaćaju. Preporuka mora biti jednostavna i prihvatljiva, ali sistematično obrađena u individualno izrađenom programu, u koji su kontrole pacijenta nužno ugrađene. Pacijenti za takve promjene moraju biti izuzetno motivirani, pogotovo da takvu promjenu zadrže kroz duže vrijeme. Prepreke na koje LOM nailazi od strane pacijenta: osobna uvjerenja i navike pojedinca i cijele obitelji, manjak znanja i vremena, niski nivo kondicije tijela ili nemoć, manjak samopouzdanja itd. Prepreke u samom LOM: osobni stav, organizacija rada, manjak vremena, neprimjeren informatički programi, nedostatak grupnog rada sa pacijentima i obitelji. Od najvažnijih čimbenika rizika za KVB, ukupni kolesterol, arterijski krvni tlak i šećerna bolest mogu se mijenjati intervencijom u prehrani. Najčešće je to smanjeni ukupan energetske unos, ali često su to i druge intervencije u prehrani. Smanjenim unosom masti životinjskog porijekla možemo smanjiti KVS za 12%[3], povećanim unosom voća za 1 porciju više na dan, možemo smanjiti KVS za 7%[4], unosom povrća za jednu porciju više na dan 4 % [4], smanjenim unosa soli za 3 gr. smanjujemo arterijski krvni tlak za 2-8 mm Hg, i KVS za 16 % [5]. Udruženi učinak prehrambene intervencije u zdravih odraslih pojedinaca može smanjiti incidenciju koronarne bolesti za 12%, a moždanog udara za 11%. Veliki problem kod unosa soli je činjenica da 70% soli u tijelo ulazi unosom gotove ili polu gotove hrane. LOM mora respektirati način života i prehrane pojedinca, ohrabrujući pripremu hrane u kući, treba uputiti pojedinca na čitanje deklaracija o sastojcima na gotovoj hrani, kao i na važnost ne dosoljavanja hrane. Dnevni unos soli ne bi smio biti veći od 6 gr. Respektirajući sol u gotovoj hrani, smanjenje bi trebalo ići na račun dodatka soli u prehrani. Smanjenjem unosa soli sa 10-12gr/dan na 5-6 gr/dan jednako je kao uzimanje jednog lijeka za sniženje arterijskog tlaka[5]. Najveći uspjeh postiže se ako se medikamentozno liječenje čimbenika rizika udruži sa promjenama prehrambenih navika.

Koliko LOM u Hrvatskoj može postići svojom programiranom intervencijom na ukupan kardiovaskularni rizik, a koju sada u ovim uvjetima sigurno ne radi, ispitat će se u Projektu «Učinkovitost intervencije liječnika obiteljske medicine u prevenciji srčanožilnih bolesti » koji je pokrenut u 5 mj. 2008. godine. Također će se analizirati postoje li regionalne razlike u prehrambenim navikama (kontinent, priobalje) ili je mediteranska prehrana u našem priobalju samo mit, a ne stvarnost.

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Diet as a risk for CVD in GP's practice

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Though its geography places it among Mediterranean countries, Croatian cardiovascular mortality (CVM) rates comply with Central and Eastern European leading ones [1]. In the year 2007, the World Organization of National Colleges and Academies of Family Doctors (the WONCA), together with other expert societies, took part in the preparation of the guidelines of the European Society of Cardiology (the ESC), to be observed with cardiovascular disease (CVD) prevention. Within this frame, a major role is played by nutrition as well. CVD prevention pursued on the basis of dietary habit changes should be targeted at population and accompanied by public health recommendations, but also at an individual [2]. Family Medicine practitioner (FMP) provides healthcare services on a holistic basis, taking into account both the person and the environment, while the role of the entire medical team (nurse, patronage nurse) in changing lifestyle habits is crucial. An FMP intervention may be targeted at an individual, family or group, and carried out in form of verbal counselling and/or provision of written material, individually-tailored advice or an organised program. Recommendations relative of changes in lifestyle habits, especially dietary ones, patients find difficult to adopt. A recommendation should be simple and acceptable, but systematically elaborated in an individually-tailored program, necessarily comprising also the patient control component. To comply with these changes, patients have to be strongly motivated, in particular when it comes to a longer-term maintenance. The obstacles faced by FMP, coming from the patient's side, are as follows: personal beliefs and individual & family habits, lack of knowledge and spare time, poor physical shape or incapacity, lack of self-confidence, etc. The obstacles coming from the FMP's side are as follows: personal attitude, organisational work pattern, lack of spare time, inadequate informational programmes, lack of group treatment involving both the patient and his/her family. Major CVD risk factors prone to change following nutrition interventions, are total cholesterol, arterial blood pressure and diabetes. The intervention in reference most commonly boils down to the restriction in energetic intake, but other forms of intervention may be pursued as well. Lowering of animal fat intake may reduce the CVD occurrence by 12% [3], the increase in fruit intake by 1 mere ration a day by 7% [4], the increase in vegetable intake by 1 mere ration a day by 4 % [4], while a 3-gram-reduction in salt intake may lead to the decrease in arterial blood pressure by 2-8 mm Hg, and the reduction in CVD incidence by 16 % [5]. The joint effect of nutritional intervention pursued in healthy adults, may decrease the coronary disease incidence by 12%, and that of stroke by 11%. As for the salt intake, the major problem arises from the fact that 70% of the salt intake is due to the consumption of prepared or semi-prepared food. Though respecting individual differences in lifestyle and the nutrition patterns, FMP must encourage the consumption of home-made food, and advise on careful reading of product declarations stating the prepared food ingredients, as well as elucidate the importance of the avoidance of additional salting. Daily salt intake should not surpass 6 grams. The reduction of salt intake from baseline 10-12 g/day down to 5-6 g/day is equally effective as the administration of one antihypertensive drug [5]. The greatest success can be achieved by joining the pharmacotherapy of risk factors with changes in dietary habits.

To what extent may the intervention of Croatian FMPs alter total CV risk, remains to be revealed within the frame of the project "The efficiency of a Family Medicine practitioner's intervention, undertaken to the goal of CV prevention", launched in May 2008. In addition, regional differences in dietary habits (continental vs coastal) shall be analysed, in order to reveal whether Mediterranean diet truly exists in our country, or represents a myth rather than reality.

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Koronarni bolesnik kontinentalne i mediteranske Hrvatske

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U dostupnoj literaturi malo je podataka o razlikama svojstava koronarnih bolesnika (posebno čimbenika rizika za koronarnu bolest) u odnosu na regionalnost. Za razliku od brojnih država gdje zemljopisne karakteristike ne omogućavaju eventualnu pojavu ovih razlika, Republika Hrvatska zbog svoje povijesti, klime i zemljopisnog oblika predstavlja primjer zemlje gdje bi takve razlike trebale postojati. Ovo bi trebalo vrijediti tim više ukoliko se uzme u obzir korištenje mediteranske prehrane, za koju je dokazano da ima blagotvorne učinke na kardiovaskularno zdravlje.[1]

Nakon niza godina zaborava, unatrag nekoliko godina se ponovno preporuča mediteranska dijeta kao glavna mjera za poboljšanje zdravlja, i to ne samo kod koronarnih bolesnika. Naime, pokazalo se kako dosljedna primjena ove vrste prehrane dovodi do značajnog poboljšanja sveukupnog zdravlja, i to na način da smanjuje ukupni mortalitet, mortalitet od kardiovaskularnih bolesti, incidenciju i mortalitet od malignih bolesti, te incidenciju Parkinsonove i Alzheimerove bolesti. [2] Navedeni zaključci su omogućili pokretanje javnozdravstvene inicijative za primarnu prevenciju navedenih rasprostranjenih kroničnih bolesti, preporučujući uvođenje prehrane vrlo slične mediteranskoj kao glavnu osnovu te inicijative.

Iako je većina dostupnih podataka o svojstvima hrvatskih koronarnih bolesnika uglavnom nedovoljna za donošenje kvalitetnih zaključaka, epidemiološko retrospektivno istraživanje iz 2003. g. koje je provedeno na hospitaliziranim bolesnicima u Republici Hrvatskoj pod nazivom TASPIC-CRO (od eng. Treatment and Secondary Prevention of Ischemic Coronary Events in Croatia V) pružilo je dovoljno kvalitetne podatke za okvirni model kontinentalnog i mediteranskog koronarnog bolesnika u Hrvatskoj.

Upravo objavljeni podaci iz tog istraživanja pokazali su kako je kod hospitaliziranih koronarnih bolesnika u Republici Hrvatskoj prevalencija arterijske hipertenzije znatno viša u kontinentalnoj Hrvatskoj u odnosu na mediteranski dio. Također je zabilježeno da hospitalizirani koronarni bolesnici u Hrvatskoj imaju veću prevalenciju sniženog HDL-kolesterola u kontinentalnoj Hrvatskoj, no da je viša prevalencija hospitaliziranih koronarnih bolesnika pušača u mediteranskoj Hrvatskoj. Osobito je zanimljivo da se unatoč velikom uzorku (3054 bolesnika) nisu pronašle razlike u drugim čimbenicima rizika za koronarnu bolest između kontinentalne i mediteranske Hrvatske, a koje bismo očekivali. [3]

Kako bi se dodatno pokušalo karakterizirati profile hospitaliziranih koronarnih bolesnika u Republici Hrvatskoj, s posebnim naglaskom na razlike između takvih bolesnika u mediteranskom i kontinentalnom dijelu, od 2006. g. započet je projekt čiji je cilj upravo to, a čija prva faza je upravo pri kraju. Iako će imati manji uzorak, tražene karakteristike se puno detaljnije ispituju, te bi nam trebale omogućiti detaljniji uvid u profil kontinentalnih i mediteranskih hospitaliziranih bolesnika u Republici Hrvatskoj.

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Coronary heart disease patient in continental and Mediterranean Croatia

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There is very few data in currently available literature on regional differences in characteristics of coronary heart disease patients (especially in cardiovascular risk factor differences). Unlike numerous other countries where geographic characteristics do not facilitate possible occurrence of these differences, Republic of Croatia represent an example of a country where these differences should exist due to favorable historic, climate and geographical conditions. This should be so even more if one takes into account the use of Mediterranean diet, that has been shown to have favorable effects on one's cardiovascular health.[1]

After having been forgotten for years, the recommendation for use of Mediterranean diet resurfaces within last few years again as one of most recommended measures for improvement of one's health, and this is so not just in the population of coronary heart disease patients, but also in some other populations. It has been shown that regular use of this type of diet significantly improves overall health of its consumer, in a way that it decreases overall mortality, cardiovascular mortality, incidence and malignant diseases mortality, and incidence of Parkinson's and Alzheimer's disease.[2] These findings have made it possible for widespread public health initiatives for primary prevention of the abovementioned common chronic diseases to be started, recommending introduction of a diet very similar to Mediterranean as its key strategy.

Although most of the available data on properties of Croatian coronary heart disease patients is insufficient for any kind of solid conclusions, there is a retrospective epidemiologic survey performed on hospitalized Croatian coronary heart disease patients in 2003 under the acronym TASPIC-CRO (Treatment and Secondary Prevention of Ischemic Coronary Events in Croatia V) which has provided with good quality data making it possible to create a broad profile of a continental and Mediterranean Croatian coronary heart disease patient.

Just published data from this survey has shown that in Croatian hospitalized coronary heart disease patients there is higher prevalence of arterial hypertension in continental Croatia in comparison to Mediterranean Croatia. It was also found that hospitalized Croatian coronary heart disease patients have higher prevalence of decreased HDL-cholesterol in continental Croatia, but higher prevalence of Croatian coronary heart disease patients who are smokers in Mediterranean Croatia. It was also interesting to find that although the sample size was quite large (3054 patients) there were no other significant differences in cardiovascular risk factors between continental and Mediterranean Croatia, although one would expect more differences to be found. [3]

In order to further try to characterize profiles of hospitalized Croatian coronary heart disease patients, with a special stress on differences between those patients in Mediterranean and continental part, a research project has been started in 2006 with that specific goal, and at this moment the first phase of this project is about to finish. Although the sample size will be smaller, requested characteristics are recorded in greater detail, and should make it possible for us to have a better insight into profiles of continental and Mediterranean Croatian coronary heart disease patients.

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Prehrana i mršavljenje značajni čimbenici kardiovaskularnog zdravlja

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Na zdravlje srca i krvnih žila utječe velik broj prehrambenih, ekoloških i nutritivnih čimbenika. Promovirajući zdravlje srca i krvožilnog sustava znači prevenirati kardiovaskularne bolesti kao što je primjerice srčani i moždani udar, te periferne bolesti krvnih žila (ateroskleroza).

Kardiovaskularne bolesti (CVD) su vodeći uzrok smrtnosti u svijetu. Tako je primjerice ukupna smrtnost od CVD-a u Ujedinjenom kraljevstvu najveća na svijetu čineći 36% smrtnosti muškaraca mlađih od 75 godina i 28% smrtnosti žena. Postoje evidentni dokazi da nutritivni čimbenici mogu smanjiti rizik od kardiovaskularnih bolesti.

Oba čimbenika količina i tip masnoće izravno se dovode u vezu s progresijom mnogih bolesti pa tako i kardiovaskularnih. Postojeće preporuke za različite masnoće su nekompletne i traže se novi dokazi. Traže se međutim kontrolirana i randomizirana klinička ispitivanja, koja će osim kvantificiranja učinaka masnoće, uzeti u obzir daljnji pristup tj interakcije nutrijenata na kardiovaskularno zdravlje

Prisutan je sve veći broj konzistentnih dokaza da hrana bogata voćem i povrćem štiti kardiovaskularni sustav kod čega je jači utjecaj na zaštitu od moždanog udara nego od kardiovaskularnih bolesti. Zbog tih saznanja su potekle preporuke da zemlje s visokim morbiditetom od CVD-a trebaju povećati dnevnu potrošnju voća i povrća.

Hrana direktno utječe na razvitak ateroskleroze (oštećenja endotela koja koja mogu zaštopati arterije) što je preduvjet za nastanak CVD-a. Hrana zatim utječe na razinu kolesterola, tjelesnu težinu, krvni tlak te razinu glukoze u krvi. Mršavljenje također utječe na kardiovaskularno zdravlje zbog mogućeg deficita hranjivih tvari te slabljenja imuniteta. Odavno je poznato da promjene životnih navika uključujući i načina prehrane mogu značajno pomoći u smanjivanju rizika.

O tome da oksidacijski udar na DNA proteina ali i masti posebno kolesterola oštećuje stanice i može biti u vezi s kardiovaskularnim bolestima te preranim starenjem, puno se zna. Ali se relativno malo zna o količini podnošljivog endogenog oštećenja nuzproduktima oksidacije i koliki je zapravo rizik za bolesti kardiovaskularnog sustava. Međutim, relativno najviše se zna da oksidacijsko oštećenje lipoproteina posebno LDL frakcije, je zasigurno povezano s nastankom ateroskleroze.

Gubitak tjelesne težine znači da unos energije mora biti manji od njene potrošnje. Ako je gubitak drastičan ili traje dugo vremena ili se godišnje višestruko ponavlja, organizam može biti ozbiljno oštećen. Najvažniji kardiovaskularni aspekti gubitka težine su:

- Dugotrajni nedostatak kalorija izaziva slabost tijela i srčanog mišića,
- Vrsta dijete (Atkinsova visoko proteinska dijeta ima loše učinke na kardiovaskularno zdravlje nakon godinu dana jer donosi obilje zasićenih masnoća i kolesterola),
- Redukcija masnoća izaziva deficit vitamina ADEK.

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Diet and losing weight – important factors for cardiovascular health

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Cardiovascular health can be influenced by a number of dietary, environmental and nutritional factors. Promoting cardiovascular health means helping to prevent such cardiovascular diseases as coronary heart disease (CHD), cerebrovascular disease (stroke) and peripheral vascular disease.

Cardiovascular disease (CVD) is the leading cause of death world-wide. CVD mortality rates in the UK are among the highest in the world, accounting for 36% of deaths in men aged less than 75 years and 28% among women. There is consistent evidence that nutritional factors can reduce the risk of CVD.

Both the level and type of dietary lipid have been implicated in the causation and/or progression of a number of different diseases including cardiovascular disease. Current dietary recommendations for different dietary lipids are incomplete and more evidence is required. There is, therefore, a need for randomised controlled trials to further assess and quantify the effects of dietary lipids, accounting for nutrient interactions, on cardiovascular health.

Numerous observational studies present consistent evidence that diets rich in fruit and vegetables protect against cardiovascular disease (CVD) - a strong protective effect of fruit and vegetables for stroke and a weaker protective effect for coronary heart disease has been observed. These observations have led to the recommendation that populations with high rates of cardiovascular disease should substantially increase consumption of fruit and vegetables,

Diet directly affects the development of atherosclerosis (lesions which can block arteries), the underlying cause for CVD. Diet also affects blood cholesterol levels, body weight, blood pressure, and blood glucose levels. Weight loss also could be a problem because lack of some nutrients and weakening of immunity system.

Changing lifestyle habits, including the way people eat, has long been known to be effective in managing these risk factors. Oxidative damage to DNA, proteins and lipids occurs routinely in cells, as well as being associated with disease and the ageing process. At present little is yet known about what might be regarded as a normal level of endogenous oxidative damage or what level might signify increased risk of disease. However, there is good evidence that oxidative damage to lipids and lipoproteins (particularly LDL oxidation) is linked with development of atherosclerosis.

Losing weight means that energy intake must be less than energy expended. If weight loss is drastic or last long time or is repeated many times a year, organism could be seriously harmed. Most important cardiovascular health aspects of losing weight are:

- Long lasting lack of calories causes body and heart muscle weakness
- Diet type (Atkins high protein diet has bad effects on cardiovascular health after a year because a plenty of saturated fat and cholesterol)
- Reduction of fat in diet means lack of ADEK vitamins

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Prehrana u bolnicama

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Brojni dokazi potvrđuju činjenicu da sklonost prema slanom okusu nije stečena već je naučena odnosno pod snažnim je utjecajem okoline. Smatra se da postoji vjerojatnost, ako je dijete naučeno na slanu hranu da će i u odrasloj dobi zadržati sklonost prema tom okusu. Međutim, rezultati istraživanja provedenih na zdravim osobama i osobama sa hipertenzijom pokazali su da smanjenje unosa soli kroz 8-12 tjedana može povoljno utjecati na promjenu prehrambenih navika i hedonističkog osjeta za slanom hranom. Dakle, moguće je naviknuti se na manje slanu hranu.

Prosječan čovjek unosi 5,5 g natrija dnevno koji potječe iz namirnica koje prirodno sadrže soli, a na tu vrijednost dosoljavanjem hrane unesemo naknadno još oko 20 %.

Zaključci dosad provedenih studija su da kontroliran ili smanjen unos soli treba biti sastavni dio liječenja ili prevencije nekoliko bolesti i stanja. Također prema preporukama Standarda prehrane bolesnika u bolnicama (NN, 127/07) navedene su dijete sa smanjenim unosom soli. Povišen unos soli nije samo usko vezan za rizik od razvoja hipertenzije, bolesti bubrega, raka želuca već indirektno utječe i na pretilost. Ovoj preporuci prethodila su istraživanja u kojima je dokazano da smanjeni unos soli ima glavnu ulogu u redukciji tjelesne težine (osobito u djece) jer se time ujedno i smanjuje unos slatkih napitaka. Sol je neophodan dodatak bez kojeg mnoga jela ne bi mogli konzumirati jer bi za nas bila neprihvatljivog okusa. Velika je odgovornost na bolničkim kuhinjama kako pripremati ukusno jelo pacijentu, a s druge strane zadovoljiti potrebe za smanjenim unosom soli. Sve se svodi na mjeru.

Ključne riječi: bolnička prehrana, dijeta sa smanjenim unosom soli, prehrambene navike

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Nutrition in hospitals

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Accumulating evidence indicates that the taste of salt is innately appealing to humans, although responses to salty foods are strongly influenced by environmental factors. Limited data reveal no clear association between early exposure to salt and various hedonic responses to salt later in life, but recent exposure markedly alters a person's preferred salt content of foods. Restricting exposure for 8-12 week can enhance the appeal of reduced-sodium foods in both normotensive and hypertensive individuals.

The average man consumes approximately 5.5 g sodium daily in food plus an additional 20% as added salt.

Context numerous studies have identified strong correlations between salt intake and increased risk for some diseases. Salt intake has long been known to influence blood pressure among hypertensive patients, increased risk for renal disease, cancer and obesity. Public health recommendations established as Standard hospital nutrition (NN, 127/07) are intend to promote diets with reduced salt intake.

Several study showed that reduction in salt intake could, therefore, play a role in helping to reduce obesity (childhood obesity) through its effect on sugar-sweetened soft drink consumption. This would have a beneficial effect on preventing cardiovascular disease independent of and additive to the effect of salt reduction on blood pressure.

Dietitians and/or foodservice managers have professional responsibility to produce quantity food recipes that are reduced in sodium and acceptable to customers.

Key words: Nutrition in hospitals, diets with reduced salt intake, nutrition habits

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Uloga medicinske sestre u provođenju mjera smanjivanja prekomjernog unosa kuhinjske soli

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Unos soli u razvijenim državama 3-5 puta premašuje preporučene vrijednosti od 5 g NaCl dnevno. Naši preliminarni rezultati ukazuju kako naši bolesnici unose između 12-20 g kuhinjske soli dnevno. Nisu uvijek sami bolesnici krivi za to jer je oko 75% kuhinjske soli „skriveno“ u gotovim namirnicama. Tako samo jedan kilogram kruha sadrži 5 g kuhinjske soli. I mnoge druge namirnice sadrže „skrivenu“ sol pa tako 100 mg hrenovki sadrži 2 g NaCl, kuhane šunke 3,6 g, slanine 4,5 itd. Čak i neke namirnice za koje ne pomišljamo sadrže veliku količinu soli kao npr. u 100 mg zamrznutih kroketa i okruglica od krumpira ima 3,3 g kuhinjske soli, kuhanih valjušaka 3,8 g, kiselih krastavaca 2,4 g itd. Naročita opasnost prijeti iz tzv. brze hrane pripremljene u restoranima. Za primjer navodim hamburger koji ima oko 7 g NaCl. Osim tog unosa, sami dosoljavanjem dodatno unosimo 10-20% suvišne kuhinjske soli. Jednim prstohvatom dodajemo oko 0,5 g NaCl, vrhom noža 0,25 g, a tko zna koliko točno soli dodamo sipajući sol iz soljenke? Prema rezultatima *EHUH* studije liječnici upozoravaju bolesnike na važnost smanjivanja prekomjernog unosa kuhinjske soli u preko 70% slučajeva, ali prema anonimnoj anketi samo 4,4% bolesnika to zaista poslušaju i primjenjuju što pokazuje nedovoljno svijest o štetnosti kuhinjske soli.

U tom segmentu je vrlo važna uloga medicinske sestre, a to je edukacija bolesnika praktičnim savjetima i u bolnicama i u ambulantama obiteljske medicine. Medicinske sestre moraju sudjelovati u pripremi brošura i plakata, te aktivno sudjelovati na stručnim sastancima šireći znanja i međusobno. Medicinska sestra bi trebala biti spona između bolesnika, liječnika i nutricionista. Kako je u svakom učenju ponavljanje vrlo važno tako i ovdje medicinske sestre moraju strpljivo kod svakog pregleda svakom bolesniku ponavljati određene bitne činjenice i spremno odgovarati na pitanja.

Role of the nurse in salt reduction programmes

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The intake of salt in developed countries is 3 to 5 times greater than the recommended quantity of 5 g NaCl per day. Our preliminary results show that our patients have salt intake of 12 to 20 g of NaCl per day. It is not always their fault because about 75% of NaCl is “hidden “ in ready made food. One kilogram of bread contains 5 g NaCl. Many other foods contain “hidden” salt, for example; 100 mg frankfurters contain 2 g NaCl, cooked ham 3.6 g, bacon 4.5 g, etc. Even some kinds of food that we would never guess contain a great quantity of salt, for example; 100 mg of frozen croquettes or dumplings with potatoes both have 3.3 g NaCl, cooked dumplings 3.8 g, pickles 2.4 g, etc. The most dangerous is fast food prepared in restaurants, for example; hamburger with 7 g NaCl. In addition, we add salt at table which is about 10 to 20 % of excess salt. One pinch of salt is about 0.5 g NaCl, salt on the tip of the knife is 0.25 g, and who knows how much salt we added by pouring it from the salt cellar.

Results of *EHUH* study show that doctors indicate to patients the importance of reduction of excessive salt intake in more that 70% of cases, but the anonymous survey showed that only 4.4% really follow the advice. This indicates that patients are not really aware that excessive salt intake can be harmful.

In this segment the role of a nurse is very important. Nurses in hospitals and GP's surgeries can educate patients by giving them practical advice. Nurses should be involved in preparing brochures and posters. They ought to take part in professional meetings and discussions educating the public and themselves. The nurse should be a link between the patient, doctor and nutritionist. *Repetitio est mater studiorum*, so, the nurse should patiently, at every examination, repeat the main facts and give answers to all the questions.

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