Prevalence of Metabolic Syndrome in the Interior of Croatia: The Baranja Region

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ABSTRACT

Metabolic syndrome (MS), a constellation of metabolic risk factors associated with development of cardiovascular diseases and Type 2 diabetes (T2D), has emerged as a public health problem of enormous proportions in developed and developing countries. We have reported previously its prevalence in several island populations of the Eastern Adriatic coast of Croatia. In spite of leading a relatively traditional life style pattern including adherence to a Mediterranean diet, the prevalence of MS in these populations is high and comparable to that in developed nations. However, data on prevalence of MS among the mainland Croatian populations is limited. Therefore, we conducted a study in an outbred population comprising of Croats, Hungarians and Serbs from the Baranja region of mainland Croatia. Although this is an ethnically heterogeneous population, the constituent groups exchange mates and therefore, are not reproductively isolated. The life style patterns are also similar. Overall prevalence of MS, assessed by the National Cholesterol Education Program (NCEP) criteria, is 40% (35% in males and 42% in females) with Body Mass Index (BMI) as the predictor of obesity and 42% (52% in males and 39% in females) with Waist Hip Ratio (WHR) as the predictor of obesity. It is likely that, in addition to genetic risk factors, a host of environmental factors that include dietary habits and relatively urban life style in a modernized society have influenced the levels of the constituent metabolic traits leading to an increased prevalence of MS.

Key words: metabolic syndrome, Croatia, body mass index, waist hip ratio, carbohydrate intolerance, dyslipidemia, National Cholesterol Education Program

Introduction

Metabolic syndrome (MS), variously defined as syndrome X plus, insulin resistance syndrome, plurimetabolic syndrome, has emerged as a major health problem in developed and developing countries[1,2]. The syndrome is a co-occurrence of impaired glucose tolerance, obesity, dyslipidemia, and high blood pressure. It is estimated that 40% of individuals in the age group of 60 years and above and 10% in the age group of 20–60 have MS[1,2]. Age adjusted prevalence of MS in an island population of the Eastern Adriatic coast of Croatia, a distinctly homogenous population living in relative isolation with a traditional living pattern in the island Hvar, is 26% (32% in males and 24% in females) with BMI of >30kg/m², and

42% (57% in males and 36% in females) with WHR of >0.90 in men, >0.85 in women as the measures of obesity[3,4]. MS increases the risk for coronary heart disease, stroke, peripheral angiopathy and T2D[4,5]. Traits involved in MS primarily consist of overweight and abdominal (intraperitoneal) apple shape obesity (high BMI), insulin resistance or glucose intolerance, hypertriglyceridemia with low level of HDL and high level of LDL cholesterol, arterial hypertension, prothrombotic state with high serum fibrinogen level or high plasminogen activator inhibitor-1 level, and pro-inflammatory state with the high serum level of C-reactive protein. About 12% of school student population fulfills at least three criteria

for MS[6,7]. The aim of this study is to estimate the prevalence and parameters of MS in the interior of Croatia: the Baranja region.

Investigations of metabolic traits in Croatia

In the investigation entitled »*The first Croatian health project*«, performed in the continental part of Croatia, Turek et al.[8] reported that the population of continental Croatia is predisposed to several metabolic disorders connected with metabolic syndrome. In a sample of 5,840 adults, they found 79% of men and 50% of women were obese or very obese. About 32% of men and 24% of women had arterial hypertension, 63% had elevated serum cholesterol, 38% presented raised triglycerides, while 20% showed elevated fibrinogen level. These results show that the population of continental Croatia has a significant risk for the majority of metabolic disorders connected with MS. This investigation did not include the inhabitants of the eastern continental Croatia – the Baranja region, and for this reason we conducted this research with the aim to assess the prevalence of metabolic disorders, which were evaluated in the rest of the continental Croatian populations as well as in isolated island populations[9].

The collaborators of the Institute for Anthropology in Zagreb recently investigated the prevalence of MS and its associated traits among the inhabitants of nine Adriatic islands (six on the island of Rab and two on the island of Vis in two). The collaborators of the School of Public Heath »Andrija Štampar« from Zagreb performed a similar investigation in the island of Mljet. The research was presented by Kolčić et al.[5]. This research particularly emphasized the likely impact of consanguinity on MS. This is the second study of prevalence of MS performed among the isolated populations on Adriatic islands. The first one was conducted during mid 1990s[3] (Rudan, 2005) among the inhabitants of five villages in the island of Hvar, published in more detail recently[4]. Kolčić et al.[5] found that MS was not connected with the estimation of heterozygosity. Such high occurrence of MS in one third of the inhabitants of these geographically isolated population groups with a traditional life style pattern points to the likely involvement of genetic factors.

Geomorphologic characteristics of the Baranja region

Baranja is an isolated geographic entity of the easter http://hr.wikipedia.org/wiki/Dunav Croatian plain. The Danube (Dunav) and the Drava rivers form boundaries towards Bačka and Slavonia, while state border with Hungary is drawn through a lowland area without relief or hydrographic barriers. This area is a part of a broader, historical District of Baranja. The oldest settlements are mentioned already in the 12th century (Branjin Vrh); the others were founded during the 13th and 14th centuries. The partition of the District of Baranja was enacted by the Treaty of Trianon in 1920. Baranja is divided into two parts: the Croatian part encompasses 1,147 square kilometers and the Hungarian one 4,541 square kilometers[10].

Natural and geographic features

Baranja (Fig 1) is mostly flatland area with very young relief. In the content and structure prevail Holocene and Pleistocene sediments (loess and loess-like sediments, sand, etc.). The following morphological entities are prominent: younger alluvial plains, older Holocene terraces of the Drava river, younger and older Würm terraces of the Drava, younger Würm terrace of the Danube, loess plains and Bansko Brdo. Very humid alluvial plains (particularly in the Kopačev Rit area) encompass 63 percent of the Baranja territory. The drainable areas (river terraces and loess plains) are most favorable for settling and agriculture (humus – fertile black soil, and brown soil). The most important waterway is the Danube, navigable the whole year. Baranja has a moderate continental climate. With the average annual precipitation rate (642 mm), it belongs to the driest parts of Croatia. The average annual temperature is 10.7 °C. The commonest is the northwest wind[10].

Inhabitants

The oldest traces of human presence date from the Neolithic period. The Hungarians arrived at the end of the 9th century and mostly assimilated the already settled Slavs. Serbs came to Baranja during the Ottoman period (1526–1687). When the Turks had retreated after liberation, the deserted Baranja was settled by Croats (Šokci) from the surroundings of Srebrenica in Bosnia (1689–1713), and during the Crnojevići migration (Čarnojevići) a lot of Serbs came along. From 1720 onwards immigrated the Germans, mostly from Austria, the Rhine basin and Bavaria. According to the historical data, Baranja had 6,900 inhabitants in 1720. Since then, except

Fig. 1. Croatia: Baranja region.

in the period of the First World War and from 1948 to 1953, when (due to war tribulations and emigration of the Germans) the population declined in number, it has been constantly growing. Today Baranja has a complex national structure. The Germans had abandoned Baranja at the end of the Second World War II, and it was from 1945 to 1948 colonized by Croats and Serbs from the regions of Hrvatsko Zagorje, Međimurje, Banija and Dalmatia[10]. Along with all the above mentioned nationalities, a large Romany community also lives in Baranja. We can say with good reason that the present population of Baranja has become heterogeneous during the several past centuries. Nowadays Baranja has one city (Beli Manastir) and eight civil districts (Bilje, Čeminac, Darda, Draž, Jagodnjak, Kneževi Vinogradi, Petlovac and Popovac). According to the census of the year 2001, Baranja has 42,633 inhabitants. From the statistics is obvious that up to the age of 19 years there are 6,868, and over 65 years 7,056 inhabitants[9].

Baranja is a suitable region in Croatia for analyzing the occurrence of MS and its components, due to its geographical configuration, historical migrations of population resulting in the current ethnic-national pattern, as well as because of roughly equal life and work conditions in this biotope, thus fulfilling the conditions for an anthropological-ecological natural experiment[11].

Sample and Methods

Baranja is divided into four regions: central, northern, southern-west and southern-east. This study deals with a representative sample consisting of 1.5% of the adult population from all regions: 414 people from all ethnic groups, including 287 women (63.3%) and 127 men (30.7%), aged 18 to 92 years. The sample is chosen at random from the regional general practice medical services.

The research was performed by standardized questionnaire used at the Institute for Anthropological Research for almost three decades, consisting of data on the family structure, health condition and life habits. Then follow anthropometric procedures and the analysis of the body mass index estimation (kg/m²), abdominal-waist and hip circumferences, clinical examination and three measurements of blood pressure in mmHg with a mercury manometer, according to the principles of the International Biological Program[12]. Blood samples were taken from all examinees for analysis of serum concentrations of glucose, triglycerides, cholesterol and fibrinogen. The analysis was performed at the biochemistry lab of the Clinical Hospital in Osijek.

Definitions of metabolic syndrome

The WHO definition[13] requires that individuals with MS have hyperinsulinemia or fasting glucose level ≥6.1 mmol/L, and at least two of the following: 1) obesity : BMI >30 kg/m² or WHR (waist to hip ratio) >0.90 in men and >0.85 in women; 2) serum triglycerides level ≥1.69 mmol/L or HDL cholesterol <0.9 mmol/L in men

and <0.85 mmol/L in women; 3) high blood pressure ≥140/90 mmHg.

The NCEP definition (ATP III)[14] does not explicitly include insulin resistance or glucose intolerance as required criteria, but rather defines MS as the co-occurrence of three or more of the following five criteria: 1) abdominal obesity – waist circumference >102 cm in men, >88 cm in women; 2) serum triglyceride level >1.69 mmol/L; 3) HDL cholesterol <1.04 mmol/L in men, <1.29 mmol/L in women; 4) high blood pressure ≥130/85 mmHg; 5) fasting plasma glucose ≥6.1 mmol/L. In this study, we have followed the working definition proposed in ATP III, with the exception that we have used BMI (≥30 kg/m²) and/or WHR (≥0.90m, ≥0.85 f) as predictors of obesity.

Biostatistical procedures

Clinical, physiological, anthropometric and biochemical state of the examinees was analyzed in order to assess MS prevalence in a representative sample. The data processing was done by the methods of non-parametric statistics of univariate analysis. Among non-parametric analyses the chi-square test was used, as well as procedures for the evaluation of continuous variables parameters: t-test and one-way and two-way variance analysis[15]. Descriptive statistics (e.g. mean and standard deviation) of anthropometric variables of the observed MS components (HEIGHT – body height; WAISTCF – waist circumference; HIPSCF – hips circumference; HIPSCF1 – hips circumference – the widest measure; BMI – body mass index; WHR – waist-hip ratio; SBP – systolic blood pressure; DBP – diastolic blood pressure; TG – triglycerides; FPG – fasting plasma glucose; FBG – fibrinogen; CHOL – cholesterol; HDL – high-density lipoprotein cholesterol, LDL – low-density lipoprotein cholesterol) and age for the total sample and for the samples of men and women was performed by the SPSS 15.0 program package. The main components analysis with varimax rotation produced four factors for both samples of men and women. The analysis was also done by using the SPSS 15.0 program package.

Results and Discussion

Results are presented in four tables. Table 1 presents descriptive statistics of the investigated parameters in both sexes of the representative sample from Baranja. The mean age did not significantly differ between genders. Men had larger waist circumference than women. Women, however, had higher body mass index. WHR was higher in men; systolic pressure was higher than the upper normal limit in both sexes: 135 mmHg. The values of systolic and diastolic pressures did not differ between genders, as well as serum concentrations of glucose or fibrinogen. Triglycerides showed higher serum concentrations in men, and in women serum concentrations of the total cholesterol, HDL and LDL cholesterol were higher.

TABLE 1
DESCRIPTIVE STATISTICS OF THE EXAMINED TRAITS IN BARANJA REGION, AGE 18 TO 92 YEARS

Traite*	Male		Female		Total	
	N	Mean±SD	N	Mean±SD	N	Mean ± SD
Age (years)	124	59.49 ± 14.62	279	60.15 ± 14.85	403	59.95 ± 14.79
HEIGHT (cm)	126	172.02 ± 7.83	287	158.92 ± 7.91	413	162.92 ± 9.92
WAISTCF (cm)	126	98.82 ± 13.92	287	94.75 ± 14.77	413	95.99 ± 14.62
HIPSCF (cm)	126	104.96 ± 10.52	287	108.73 ± 12.57	413	107.58 ± 12.10
HIPSCF1 (cm)	126	99.90 ± 10.37	287	102.37 ± 11.98	413	101.61 ± 11.56
WEIGHT (kg)	126	82.27 ± 16.44	287	73.17 ± 13.94	413	75.95 ± 15.31
BMI (kg/m²)	126	27.73 ± 4.95	287	29.09 ± 5.49	413	28.67 ± 5.36
WHR	126	0.94 ± 0.08	287	0.92 ± 0.12	413	0.94 ± 0.12
SBP (mmHg)	126	137.45 ± 20.62	281	137.21 ± 22.53	407	137.28 ± 21.96
DBP (mmHg)	126	82.71 ± 9.86	281	83.45 ± 11.46	407	83.22 ± 10.99
TG (mmol/L)	126	2.50 ± 1.70	281	2.26 ± 1.31	407	2.34 ± 1.45
FPG (mmol/L)	126	6.01 ± 2.75	281	5.98 ± 2.97	407	5.99 ± 2.91
FBG (g/L)	126	3.68 ± 1.02	281	4.04 ± 0.99	407	3.93 ± 1.01
CHOL (mmol/L)	126	5.38 ± 1.20	281	5.73 ± 1.14	407	5.62 ± 1.17
HDL (mmol/L)	126	1.02 ± 0.38	281	1.16 ± 0.40	407	1.12 ± 0.40
LDL (mmol/L)	126	3.24 ± 0.85	281	3.60 ± 0.88	407	3.48 ± 0.89

HEIGHT – body height; WAISTCF – waist circumference; HIPSCF – hips circumference; HIPSCF1 – hips circumference – the widest measure; BMI – body mass index; WHR – waist-hip ratio; SBP – systolic blood pressure; DBP – diastoilic blood pressure; TG – triglycerides; FPG – fasting plasma glucose; FBG – fibrinogen; CHOL – cholesterol; HDL – high-density lipoprotein cholesterol, LDL – low-density lipoprotein cholesterol

The age-adjusted prevalence of the individual MS related phenotypes with cut-off values as prescribed in the NCEP definition (Table 2) shows that in general, the Baranja population has substantially higher prevalence of the risk phenotypes associated with MS. With the exception of WHR and FPG, the metabolic abnormalities are more prevalent in females. When measured by BMI (≥30 kg/m²), obesity is more prevalent in females (38%) compared to males (27%); however, measured by WHR (≥ 0.9), males have a very high prevalence of obesity (71%) compared to the females (34%). This shows that abdominal obesity is substantially high in the Baranja population with a significant gender-specific difference.

The age-adjusted prevalence of one or more components of MS related traits and co-occurrence of three or more of the constituent traits shows that MS is substantially high in Baranja (Table 3). Overall prevalence of MS (assemblage of l 3 constituent abnormalities) is 40% with BMI as the measure of obesity (35% in males and 42% in females), and 42% with WHR as the measure of obesity (52% in males and 38% in females).

The age-specific data (Fig 2) shows that among males MS is almost non-existent in the age group < 30 years. With BMI, the prevalence increases from 20% in the age group 30–39 years to 50% in the age group 40–49 years and then drops sequentially in the later age groups. With

TABLE 2
AGE-ADJUSTED PREVALENCE (%) OF NCEP DEFINED INDIVIDUAL METABOLIC SYNDROME RELATED PHENOTYPES IN BARANJA

	Male		Female		Total	
	N	% ± SE	N	% ± SE	N	% ± SE
BMI ≥ 30 kg/m²	124	26.65 ± 4.64	279	37.93 ± 3.68	403	34.49 ± 2.93
WHR ≥ 0.9	124	70.77 ± 7.63	279	34.17 ± 3.51	403	44.91 ± 3.34
SBP ≥ 130 mmHg and DBP ≥ 85 mmHg	124	38.46 ± 5.55	278	40.06 ± 3.79	402	39.8 ± 3.15
TG ≥ 1.69 mmol/L	124	53.97 ± 6.55	278	61.99 ± 4.71	402	59.95 ± 3.86
FPG l 6.1 mmol/L	124	28.28 ± 4.85	278	25.39 ± 3.06	402	25.62 ± 2.52
HDL < 1.04 mmol/L (male) or HDL < 1.29 mmol/L (female)	124	55.45 ± 6.68	279	59.86 ± 4.62	403	58.81 ± 3.82

BMI – body mass index; WHR – waist-hip ratio; SBP – systolic blood pressure; DBP – diastolic blood pressure; TG – triglycerides; FPG – fasting plasma glucose; HDL – high-density lipoprotein cholesterol
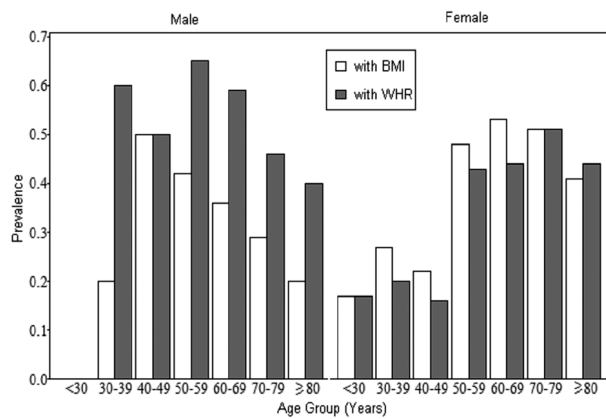
Fig. 2. Age specific prevalence of MS in Baranja. BMI – body mass index; WHR – waist-hip ratio.

WHR, however, the prevalence of MS is not significantly different among the four age groups = 69 years, with a range of 50 to 64%. The prevalence in the age group 70–79 years is 46% and among individuals l 80 years, the prevalence is 40%. With WHR, the age-specific prevalence of MS in males is significantly higher compared to BMI associated MS in all age groups except for the group of 40–49 years, in which the prevalence is similar. The most dramatic increased prevalence is in the age group 30–39 years, 20% BMI associated and 60% WHR associated. This disproportionate dissimilarity reflects a higher prevalence of abdominal obesity among the younger males. Among females, the trend of decreasing prevalence of BMI associated MS with increasing age is not obvious as in the males. Rather a high prevalence is observed, 42 to 52% in age all groups ≥ 50 years. This is reflected in an overall higher prevalence of BMI associated MS in females (42%) compared to males (35%, Table 3). A similar trend is observed with respect to WHR associated MS. Also, with both BMI and WHR, 18% of fe-

males < 30 years have MS. WHR associated MS is, however, significantly higher in males (52%) than in females (38%).

As noted in the Methods, the study sample is chosen from the regional general practice population of Baranja. This represents a mixed population of Croats, Hungarians, Serbs and Romany. The sample sizes are different and the Romany (N = 22) and Hungarians (N = 49) are substantially small. Nonetheless, we have performed a preliminary analysis of the MS related traits separately for each group (Table 4). It is evident that among the four ethnicities there is no significant difference in age-adjusted prevalence of the phenotypes. Therefore, the population of Baranja can be considered as a homogenous group with respect to MS and its constitutive traits.

In this study we investigated the prevalence of MS in an integrated population, i.e. a reproductively outbred group, in the north-eastern part of Croatia. This area of Croatia is geographically bounded on the north by the state border with Hungary, on the east with Serbia with the state border mostly passing through the Danube river, and on the south with the Drava river which separates Baranja from the rest of the continental Croatia. Although it is geographically a distinctly defined area, the population is heterogeneous and consists of Croats, Hungarians, Serbs and others (mostly Romany). We did not find significant differences in the prevalence of MS related traits either in men or in women, although the sample sizes are smaller. Thus the results should be considered as the prevalence of MS and its components in a genetically heterogeneous population, in contrast to the results presented by Rudan[3], Deka et al.[4] and Kolčić et al.[5], obtained from endogamous populations of the Adriatic islands that are generally similar. The overall prevalence of MS is higher in the mixed groups compared to the island populations. We hypothesize that the increased prevalence of MS and its components, i.e. their phenotypes, along with intrinsic (genetic) factors, are also con-

TABLE 3
AGE-ADJUSTED PREVALENCE OF 1 OR MORE ABNORMALITIES OF METABOLIC SYNDROME IN THE BARANJA POPULATION

Measure of obesity	No. of abnormalities	Percent ± SE		
		Male	Female	Total
BMI	≥ 1	91.71 ± 8.59	93.18 ± 5.78	92.80 ± 4.80
	≥ 2	62.02 ± 7.07	67.32 ± 4.90	66.00 ± 4.05
	≥ 3	34.95 ± 5.33	42.40 ± 3.90	39.95 ± 3.15
	≥ 4	10.36 ± 2.87	18.21 ± 2.55	15.88 ± 1.99
	≥ 5	3.76 ± 1.68	3.63 ± 1.15	3.72 ± 0.96
WHR	≥ 1	96.99 ± 8.85)	92.09 ± 5.73	93.80 ± 4.82
	≥ 2	76.53 ± 7.89	69.59 ± 5.00	71.46 ± 4.21
	≥ 3	52.33 ± 6.54	38.49 ± 3.72	42.43 ± 3.24
	≥ 4	15.70 ± 3.51	16.47 ± 2.43	16.38 ± 2.02
	≥ 5	5.36 ± 2.03	4.33 ± 1.25	4.71 ± 1.08

BMI – body mass index; WHR – waist-hip ratio

TABLE 4

AGE-ADJUSTED PREVALENCE (% ± SE) OF METABOLIC SYNDROME RELATED PHENOTYPES AMONG
THE FOUR ETHNICITIES OF BARANJA

	Croatians	Hungarians	Serbs	Romany
Male	N = 76	N = 16	N = 26	N = 6
BMI ≥ 30 kg/m²	23.95 ± 5.49	29.46 ± 13.17	32.60 ± 11.53	7.58 ± 7.58
WHR ≥ 0.9	69.09 ± 9.49	57.93 ± 18.32	83.42 ± 18.65	33.33 ± 19.25
SBP ≥ 130 mmHg; DBP ≥ 85 mmHg	37.30 ± 6.93	47.72 ± 16.87	32.60 ± 11.53	33.33 ± 19.25
TG ≥ 1.69 mmol/L	58.36 ± 8.70	57.88 ± 18.30	48.79 ± 15.43	19.70 ± 11.37
FPG ≥ 6.1 mmol/L	28.88 ± 6.16	11.28 ± 7.98	32.60 ± 11.53	25.76 ± 18.21
HDL < 1.04 mmol/L	55.28 ± 8.53	61.36 ± 18.5	44.10 ± 12.23	19.70 ± 11.37
Female	N = 158	N = 33	N = 72	N = 16
BMI ≥ 30 kg/m²	42.02 ± 5.13	33.91 ± 10.22	30.29 ± 6.46	37.12 ± 15.15
WHR ≥ 0.9	33.75 ± 4.64	40.74 ± 10.89	36.44 ± 7.29	16.67 ± 9.62
SBP ≥ 130 mmHg; DBP ≥ 85 mmHg	39.37 ± 5.00	38.76 ± 10.75	37.85 ± 7.28	50.00 ± 15.81
TG ≥ 1.69 mmol/L	61.43 ± 6.24	51.42 ± 12.86	67.13 ± 9.59	54.55 ± 16.45
FPG ≥ 6.1 mmol/L	26.45 ± 4.13	25.52 ± 9.02	26.65 ± 6.11	4.55 ± 4.55
HDL < 1.29 mmol/L	62.50 ± 6.28	54.00 ± 12.39	52.06 ± 8.44	71.21 ± 20.56
Total	N = 234	N = 49	N = 98	N = 22
BMI ≥ 30 kg/m²	36.75 ± 3.96	32.65 ± 8.16	30.61 ± 5.59	31.82 ± 12.03
WHR ≥ 0.9	45.30 ± 4.40	48.98 ± 10.00	45.92 ± 6.85	27.27 ± 11.13
SBP ≥ 130 mmHg; DBP ≥ 85 mmHg	39.06 ± 4.09	42.86 ± 9.35	35.71 ± 6.04	59.09 ± 16.39
TG ≥ 1.69 mmol/L	60.68 ± 5.09	54.17 ± 10.62	60.20 ± 7.84	63.64 ± 17.01
FPG ≥ 6.1 mmol/L	26.92 ± 3.39	20.83 ± 6.59	27.55 ± 5.30	13.64 ± 7.87
HDL < 1.04 mmol/L (m) or HDL < 1.29 mmol/L (f)	60.26 ± 5.07	61.22 ± 11.18	52.04 ± 7.29	68.18 ± 17.60

BMI – body mass index; WHR – waist-hip ratio; SBP – systolic blood pressure; DBP – diastolic blood pressure; TG – triglycerides; FPG – fasting plasma glucose; FBG – fibrinogen; CHOL – cholesterol; HDL – high-density lipoprotein cholesterol, LDL – low-density lipoprotein cholesterol

ditioned by a series of exogenous factors (like nutritional habits, physical activity). Here the question arises which of these factors has a more prominent role in the phenotypic expression of MS. It is known that the population of Baranja has clearly marked and different types of nutritional habits compared to the inhabitants of the Adriatic islands. It is primarily saturated with animal fats and substantial quantities of animal proteins, in contrast to the Mediterranean diet[16,17], characteristic for the island inhabitants in the Adriatic. Thus we argue that the real evaluation of MS prevalence in a population should be based on the analyses of both intrinsic (genetic) and extrinsic (environmental) factors influencing the human morphological and biochemical phenotypes.

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PREVALENCIJA METABOLIČKOG SINDROMA U REGIJI BARANJE

S A Ž E T A K

Metabolički sindrom (MS), skup metaboličkih čimbenika opasnosti koji su povezani s razvojem kardiovaskularnih bolesti i šećerne bolesti tipa 2 (T2D) velikog je i sve većeg javnozdravstvenog značaja u razvijenim zemljama i zemljama u razvoju. Ranije smo objavili prevalenciju tog sindroma u nekoliko izoliranih otočkih populacija Hrvatskog istočnog Jadrana. Prevalencija MS u tim populacijama je visoka, ako se podaci usporede s onima u razvijenim zemljama, unatoč tome što se na tim otocima provodi relativno tradicijski način življenja koji uključuje korištenje mediteranske prehrane. No međutim, podaci o učestalosti MS u kopnenom dijelu Hrvatske su oskudni. Stoga smo proveli istraživanje u populaciji koja obuhvaća Hrvate, Mađare, Srbe i Rome iz regije Baranje, koja se nalazi u kopnenom dijelu Hrvatske. Iako se radi o etnički heterogenoj populaciji, ona nije reprodukcijski izolirana i način života među tim skupinama je sličan. Dijagnozu MS postavili smo na osnovi kriterija Nacionalnog programa kolesterolske poduke (NCEP). U ocjeni pretilosti prema indeksu tjelesne mase (BMI), ukupna prevalencija MS iznosila je 40% (35% u muškaraca i 42% u žena), dok u ocjeni pretilosti prema omjeru struka i bokova (WHR) ukupna prevalencija MS iznosila je 42% (52% u muškaraca i 39% u žena). Čini se da pored genetskih čimbenika opasnosti, mnoštvo čimbenika okoliša utječe na razinu sastavnih metaboličkih značajki koje vode ka porastu prevalencije MS, a što uključuje navike prehrane i relativno gradski način življenja u moderniziranom društvu.