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Prevalence of Metabolic Syndrome in Adult Population of District of Tetovo in the Northwest Region of the Republic of Macedonia

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ABSTRACT

Objective: *To estimate the prevalence of metabolic syndrome (MetS) and its separate components in the adult population of the district of Tetovo.* ***Methods:*** *Total of 630 subjects aged over 18 years were selected at random, from the primary healthcare register, to constitute a representative sample of a population in the district of Tetovo, adjusted for age and sex. MetS is defined according to the definition of the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATPIII).* ***Results:*** *The prevalence of MetS in the district of Tetovo was 28.25%. It was significantly higher in women than in men (34.06% versus 22.26%, p=0.004). The largest number of people with MetS living in rural areas (31.32% versus 23.60%, p=0.002). Of the particular components of MetS, 52.06% of the population had increased arterial blood pressure, 46.35% reduced values of high-density lipoprotein cholesterol (HDL-C) and 43.17% abdominal adiposity (AA). In women population, more dominated was abdominal adiposity (59.38% and 26.54%, p=0.000), in men more dominated was increased arterial blood pressure (53.44% and 50.65%, p=0.48).* ***Conclusion:*** *The prevalence of MetS in our population is high, particularly in women. The prevalence rates for arterial hypertension and abdominal obesity are among the highest reported for the region. Advice on diet and change in lifestyles, in addition to the pharmacological treatment of this category, would contribute to the prevention of cardiovascular disease, type II diabetes and complications from these diseases.*

Keywords: Metabolic syndrome, Prevalence, Republic of Macedonia, Abdominal obesity

Abbreviations: MetS: Metabolic Syndrome; NCEP ATP III: National Cholesterol Education Program Adult Treatment Panel III; TG Triglycerides; WC: Waist Circumference; HDL-C: High-Density Lipoprotein-Cholesterol; AA: Abdominal Adiposity; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; BMI: Body Mass Index; CI: Confidential Interval; Cm: Centimeter; mmol/L: Millimoles per liter; CARMELA: Cardiovascular Risk Factor Multiple Evaluation in Latin America; DECODE: Diabetes Epidemiology Collaborative Analysis of Diagnostic Criteria in Europe; NHANES: National Health and Nutrition Examination Survey; SD: Standard Deviation; WHO: World Health Organization

INTRODUCTION

Metabolic Syndrome (SM) is a combination of metabolic and anthropometric abnormalities that increase the risk of cardiovascular disease and diabetes mellitus type 2 [1]. In these persons, the relative risk of cardiovascular disease, cardiovascular deaths, myocardial infarction, and cerebrovascular insult is increased for 2-3-fold [2]. It is also associated with increased risk for diabetes mellitus type 2 for 3.5 to 5-fold [3]. The prevalence of this syndrome is high and growing, both in developed and developing countries. In Europe, 1 in 4 people and in the United States (US) 1 in 3 people are thought to have this syndrome [4,5].

There are many reports on the prevalence of metabolic syndrome in different populations. It varies depending on the definition used to determine the metabolic syndrome and the age of the population involved in the study. However, despite the same methodology used in the study, the prevalence of SM is often presented with different values for different countries. There are racial, ethnic as well as the socioeconomic and sociocultural factors of different communities that influence this change.

In the NHANES study for the US population that is a multiracial and multiethnic population, the prevalence among Mexican Americans was 31.9%, among white Americans 23.8%, and among Afro-Americans 21.6% [4]. Even in the CARMELA study for Latin American countries and the DECODE study for different European countries, the differences in the prevalence of metabolic syndrome were clearly noted [5,6]. On the other hand, the highest prevalence among women (India, Brazil, Mexico, Peru, Iran, Spain, Tunisia, Jordan, Turkey) than men (France, Germany, Australia, Finland, Denmark) seems to be attributed, among others, to the cultural differences as well as different socio-economic statuses [7-19]. Almost the same results for both sexes have been found in some countries (Bulgaria, Romania and Greece) [20-22].

What is apparent in many studies is the growing tendency of the prevalence of metabolic syndrome. In the NHANES study for the US adult population in the last 15 years, it has increased by 5% [23]. Similar data have also been obtained from the San Antonio Heart Study and some other studies [24-27]. Because of the epidemic dimensions that have emerged and the clear impact of social, economic and lifestyle factors on its prevalence, MetS is not only a health but also socio-economic problem worldwide.

In the Republic of Macedonia so far there has been no study on the prevalence of metabolic syndrome and its components at the regional and national level. By determining the frequency of MetS and its specific components, this study aims to obtain an overview and a database of the epidemiological situation with all its features, for the district of Tetovo in the northwest region of the Republic of Macedonia.

MATERIALS AND METHODS

This cross-sectional study was conducted among the permanent residents of the Tetovo region aged >18 years (average age 43.81 ± 16.01 years, ± 95% CI: 42.56 to 45.06). The number of 630 subjects (320 women and 310 men), adjusted by sex and age, is a representative sample of the population of 185,743 inhabitants in the district of Tetovo (According to the population census on 31/12/2010 in the municipalities and regions of the State Statistical Office of the Republic of Macedonia) [28]. Samples were selected randomly from the primary healthcare register. It should be noted that in the Republic of Macedonia, every resident is registered in the primary health care register of the nearest physician. Within the scope of activities for achieving the goals of primary health care for the prevention of cardiovascular disease, for men and women over the age of 18, the family doctor periodically randomly invites all major persons to be examined. Precisely from this contingent were also recruited subjects for our study. Inclusion criteria were all individuals over the age of 18 who lived at least in the last 5 years in the Tetovo region. Pregnant women are excluded from the study. The data was collected from September 2013 to March 2014, after notifying and verbal approval by the subjects. All subjects were interviewed by completing a questionnaire, according to the "WHO STEPS, Instrument for Chronic Disease Risk Factor Surveillance" modified for current conditions. The questionnaire was completed by the primary doctor according to the instructions and the preliminary training on the interview method.

Anthropometric measurements were made in accordance with standard techniques and equipment (international OBSH 1998 obesity study) in light clothing subjects. The measurements are done twice, and their average is used as the final reading. The waist circumference (WC) of all subjects was measured with a measuring tape at the midpoint between the lower margin of the last palpable rib and the top of the ileal crest. The measurement was done in centimeters (cm), with a margin of about 1 cm. Abdominal obesity is considered to be the waist circumference values ≥102 cm for men and ≥ 88 cm for women. Blood pressure (BP) on all subjects was measured using a Digital Monitor (OMRON T5, Japan). Measurements were made twice (by 5 minutes of time interval) and the average of two measurements was recorded. Hypertension is considered a systolic blood pressure of 130 mmHg or greater and a diastolic blood pressure of 85 mmHg or greater, or the use of antihypertensive medicines.

The venous blood samples for measurements of total cholesterol (TC), HDL-cholesterol (HDL-C), triglyceride (TG), and glycemia were collected in the morning after 10 hours overnight fasting. All samples were analyzed on the same day, using the Roche Diagnostic COBAS Integra 400 biochemical analyzer. For the determination of metabolic syndrome, we have applied the revised criteria according to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATPIII) from 2005.

According to this definition, with metabolic syndrome are considered subjects who had at least three of these 5 factors:

1. Abdominal obesity (waist circumference ≥ 102 cm in men and ≥ 88 cm in women).
2. Triglycerides ≥ 1.7 mmol/l or specific treatment for this disorder.
3. HDL-Cholesterol <1.03 mmol/l in men and <1.29 mmol/l in women or specific treatment for this disorder.
4. Systolic blood pressure ≥ 130 mmHg and/or diastolic blood pressure ≥ 85 mmHg or hypertension treatment.
5. Fasting glucose ≥ 5.6 mmol/l or prior diagnosis of diabetes mellitus type 2.

Statistical Analysis

Statistical data processing is done in STATISTICA 7.1 and SPSS 13.0 statistical programs. The following methods have been implemented:

- In series with numerical variables, were assigned: Descriptive Statistics (Mean ± SD ± 95.00 CI: Minimum Value, Maximum Value)
- In series with categorical variables, differences between analyzed parameters are tested with Pearson Chi-square (χ^2);
- In numerical series with no deviations from a normal distribution, the difference between the two independent samples was tested by t-test for independent samples.
- In numerical series with a deviation from a normal distribution, the difference between the two independent samples was tested by Mann-Whitney U test (U/Z);
- The prognostic role of certain parameters analyzed as independent variables on MetS as a dependent phenomenon is assigned with the application of Logistic Regression (Chi Square, WALD, Exp (B)).

RESULTS

From a total of 630 residents of the district of Tetovo involved in the study, 310 (49.21%) were men and 320 (50.79%) were women. The average age of subjects varies from 43.81 ± 16.01 years, ± CI 42.56 to 45.06, the minimum age was 18 years and the maximum age was 89 years. Descriptive statistics of parameters analyzed at sample level are presented in Table 1.

Table 1 Descriptive statistics of the study subjects

Variables	Valid N	Mean	Confidence −95.00%	Confidence +95.00%	Minimum	Maximum	S.D
Glucose	630	5.41	5.27	5.56	3.7	21.8	1.86
TG	630	1.68	1.61	1.76	0.34	8.7	0.99
HDL-C	630	1.25	1.22	1.28	0.37	5.5	0.4
WC	630	93.28	92.28	94.29	58	161	12.82
SBP	630	132.22	130.45	133.99	90	230	22.58
DBP	630	82.17	81.22	83.13	45	140	12.17
Weight	630	78.31	77.33	79.3	42	118	12.59
Height	630	170.06	169.41	170.72	150	195	8.36
BMI	630	27.14	26.79	27.49	16	47.84	4.47

S.D: Standart Deviation; TG: Triglycerides; HDL-C: High Density Lipoprotein Cholesterol; WC: Waist Cicrcumference; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; BMI: Body Mass Index

In our study, 178 subjects met the criteria for metabolic syndrome. Prevalence rates was 28.25%, of which 109 (34.06%) women and 69 (22.26%) men (Table 2). For $p<0.01$ ($p=0.004$) the prevalence of metabolic syndrome in women was significantly higher than in men.

Table 2 Prevalence of metabolic syndrome and its components by sex and age group

Variables	Prevalence %					
	Metabolic Syndrome	Arterial Hypertension	Hyperglycemia	Abdominal Adiposity	Low HDL-C	Hypertriglyceridemia
Total	28.3	52.1	25.2	43.2	46.4	39.1
Male	22.3	50.7	25.8	26.5	44.5	42.3
Women	34.1	53.4	24.7	59.4	48.1	35.9
p value	p=0.004**	p=0.48	p=0.75	p=0.000***	p=0.50	p=0.10
-	-	χ^2=0.49	χ^2=0.10	χ^2=69.57	χ^2=0.444	χ^2=2.64
Age group						
18-29	3.3	18.4	13.1	10.5	32.7	22.9
30-39	22.8	30.2	20.6	32.4	48.5	45.6
40-49	33.9	60.6	21.3	52	40.9	44.9
50-59	40	78	35	63	23	45
60-69	51.6	90.3	41.9	74.2	33.9	38.7
>70	51.9	92.3	44.2	71.2	19.2	44.2
p value*	P=0.000***	P=0.000***	P=0.000**	P=0.000***	P=0.002**	P=0.000***
-	-	χ^2=196.85	χ^2=38.78	χ^2=134.18	χ^2=18.88	χ^2=23.15
χ^2 Test; p<0.05*; p<0.01**; p<0.001***						

The largest number of people with MetS lived in rural areas (31.32% versus 23.60%), (95% CI: 2.7923 - 12.5985, p=0.002). Tables 3 and 4 show differences in analyzed parameters between men and women subjects with metabolic syndrome. Males have significantly higher triglyceride values (Z = –2.17 and p<0.05), abdominal adiposity (Z = –2.86 and p<0.01), height (Z = –7.87 and p<0.001) and the weight (for t = –4.13 and p<0.001) in relation to women. Women have significantly higher HDL-C (Z = –3.33 and p<0.001) and SP (Z=2.82 and p<0.01) in relation to men. Differences on other parameters was not important.

Table 3 Analyzed parameters, subjects with Met, differences, men and women

Variables	Rank Sum Women	Rank Sum Male	U	Z	p-value	Valid N	Valid N
Glucose	9296	6635	3301	−1.37	0.17	109	69
TG	9029	6902	3034	−2.17	0.03*	109	69
HDL−C	10872	5059	2644	3.33	0.000***	109	69
WC	8797.5	7133.5	2802.5	−2.86	0.00**	109	69
SBP	10700	5231	2816	2.82	0.00**	109	69
DBP	10249.5	5681.5	3266.5	1.47	0.14	109	69
Height	7121	8810	1126	−7.87	0.000***	109	69
Mann-Whitney U Test (U/Z); p<0.05*; p<0.01**; p<0.001***; TG: Triglycerides; HDL-C: High Density Cholesterol; WC: Waist Cicrcumference; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure							

Table 4 Analyzed parameters, subjects with Met differences men and women

Variables	Mean femra	Mean Meshkuj	t-value	df	p	Valid N	Valid N
Weight	82.78	89.824	−4.13	176	0.000***	109	69
BMI	31.11	30.1	1.64	176	0.1	109	69
t-test; p<0.001*** BMI: Body Mass Index							

Figure 1 shows the rates of prevalence of subjects with metabolic syndrome, by sex and age. They show a rise in prevalence rates with increasing age in subjects of both sexes. In the distribution of subjects with metabolic syndrome according to age intervals for 2=6.31 and p>0.05 (p=0.28), there was no significant difference between the two sexes.

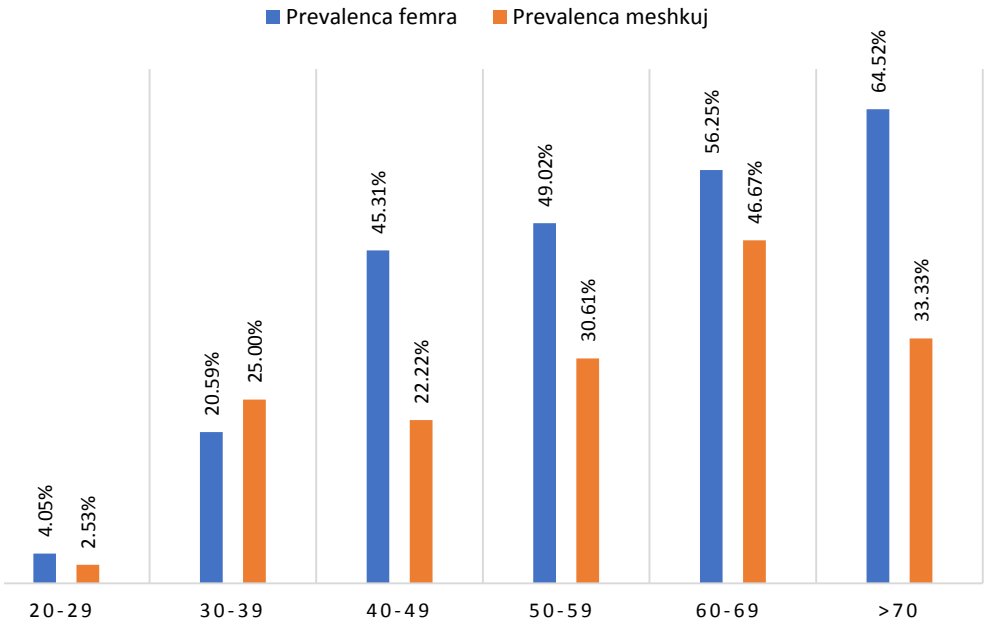

Figure 1 Prevalence of metabolic syndrome/distribution by age and sex

In Figure 2 and Table 2 is shown the prevalence of particular components of the metabolic syndrome in general and by gender to the surveyed subjects (n=630). The most common component was arterial hypertension (52.06%). However, in women, the most common component was abdominal obesity, with a significant difference in relation to men (59.38% vs. 26.54%; p=0.000), whereas decreased HDL-C level was also most common in women, but the difference was not significant (48.13% vs 44.51%, p=0.505). Most common component in men was arterial hypertension, but the difference was not significant (53.44% vs. 50.65%, p=0.48), as well as hyperglycemia and hypertriglyceridemia (25.81% vs. 24.69%; p=0.75 and 42.26% vs. 35.94%; p=0.10) respectively.

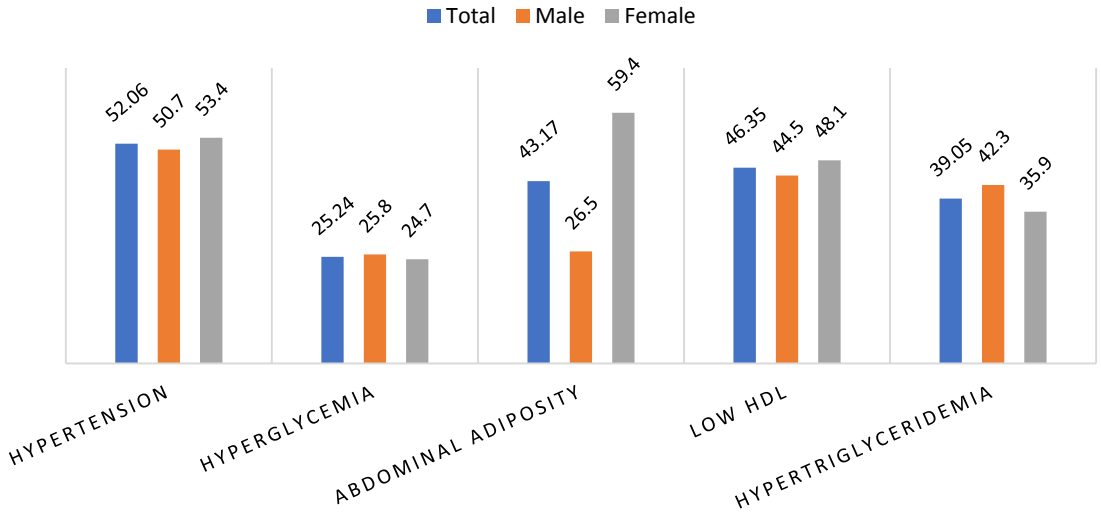

Figure 2 Prevalence of specific components of metabolic syndrome, in total and by sex (N=630)

Table 2 and Figure 3 show the distribution of prevalence of metabolic syndrome components by age group values. In the distribution of subjects by age group in relation to arterial hypertension (for χ^2=196.85 and p<0.001), hyperglycemia (for χ^2 = 38.78 and p<0.001), abdominal adiposity (for χ^2=134.18 and p<0.001), Low HDL-C (for χ^2=18.881 and p<0.05) and hypertriglyceridemia (for χ^2=23.15 and p<0.001) there was significant difference.

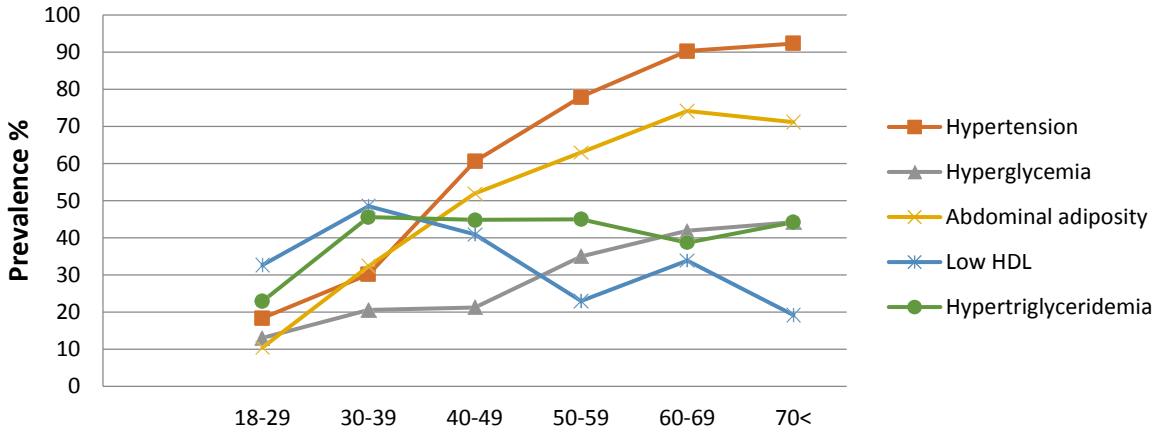

Figure 3 Components of metabolic syndrome/prevalence by age group (N=630)

Table 5 presents the prevalence of specific components of metabolic syndrome in subjects with metabolic syndrome (n=178). Abdominal adiposity (94.94%) and arterial hypertension (85.5%) were the most common components of both sexes but without significant difference between the two sexes (p=0.73 and p=0.38) respectively. Only the prevalence of hypertriglyceridemia had a significant difference between the sexes (men 82.6 and women 65.1), for $\chi^2 = 6.38$ and $p<0.05$ (p=0.01).

Table 5 Prevalence of metabolic syndrome components in subjects with metabolic syndrome (n=178)

Variables	Prevalence %				
	Arterial Hypertension	Hyperglycemia	Abdominal Adiposity	Low HDL-C	Hypertriglyceridemia
Total	88.2	57.9	94.9	60.01	71.9
Male	85.51	62.32	96.67	62.31	82.61
Women	89.91	55.05	94.5	58.71	65.14
p-value*	p=0.38	p=0.34	p=0.73	p=0.07	p=0.01*
χ^2	χ^2=0.79	χ^2=0.92	χ^2=0.12	χ^2=3.23	χ^2=6.38
χ^2 Test; *p<0.05					

Distribution of sample subjects (n=630) according to the number of MetS components present, is shown in Table 6. Of the total number of subjects, only 16.03% (19.35% men and 12.81% women) were without any components of metabolic syndrome, while 83.97% (80.64% men and 87.18% women) had at least 1 MetS component. At least 2 components had more than half of subjects (51.61% men and 62.8% women). Of the 5 components, there were 2.38% (2.26% men and 2.5% women).

Table 6 The prevalence by number of components of metabolic syndrome by sex

Components	Prevalence %		
	Total (n=630)	Male (n=310)	Women (n=320)
0	16.03	19.35	12.81
>1	83.97	80.64	87.18
>2	57.3	51.61	62.8
>3	28.25	22.26	34.06
>4	13.01	9.36	16.56
5	2.38	2.26	2.5

The predictive role of glucose, triglycerides, HDL-C, waist circumference, systolic blood pressure (SBP), diastolic blood pressure (DBP) and age were analyzed as independent variables in the occurrence of metabolic syndrome (Table 7).

Table 7 Estimating the predictive role of glucose, triglycerides, HDL-C, abdominal adiposity (WC) systolic blood pressure, diastolic blood pressure and age in Mets

Step 1(a)	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for Exp(B)	
							Lower	Upper
Gl	0.397	0.099	16.076	1	0	1.487	1.225	1.806
TG	0.977	0.16	37.359	1	0	2.655	1.941	3.631
HDL-C	-2.793	0.479	33.929	1	0	0.061	0.024	0.157
WC	0.097	0.022	20.034	1	0	1.102	1.056	1.150
SBP	0.028	0.009	9.452	1	0.002	1.028	1.010	1.047
DBP	0.020	0.018	1.309	1	0.253	1.020	0.986	1.056
Age	0.017	0.008	4.236	1	0.04	1.018	1.001	1.035
Constant	24.978	23.711	1.110	1	0.292	0.7043	-	-

a Variable(s) entered on step 1: Gl, Tr. HDL-C, WC, SBP, DBP, Age Note: Gl: Glucose; TG= Triglycerides; HDL-C: High Density Cholesterol; WC: Waist Circumference; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure

The greatest influence on the appearance of metabolic syndrome had triglycerides/WALD=37.36 ($p<0.001$), then HDL-C/WALD=33.93 ($p<0.001$), waist circumference (WC)/WALD=20.03 ($p<0.001$), glucose/WALD=16.08 ($p<0.001$), SBP/WALD=9.45 ($p<0.01$) and age/WALD=4.24 ($p<0.05$). The influence DBP, on the appearance of metabolic syndrome for $p>0.05$ was not significant. When triglycerides increase for 1 mmol/l, the risk of metabolic syndrome is increased by 165.5%, Exp (B)=2.655. Triglycerides influence was significant ± CI: 1.94-3.63, $p<0.001$ ($p=0.000$).

When HDL-C increases for 1 mmol/l, the risk of metabolic syndrome is reduced by 93.9%, Exp (B)=0.061, HDL-C effect was significant ± CI: 0.02-0.16, $p<0.001$ ($p=0.000$), it can be said that HDL-C acts in a protective manner in the appearance of metabolic syndrome. When glucose increase for 1 mmol/l, the risk of metabolic syndrome is increased by 48.7%, Exp (B)=1.49, glucose influence was significant ± CI: 1.23-1.81, $p<0.001$ ($p=0.000$).

During the increase in abdominal adiposity (waist circumference) for 1 cm, the risk of metabolic syndrome is increased by 10.2%, Exp (B)=1.102, the effect of abdominal adiposity was significant ± CI: 1.06-1.15, $p<0.001$ ($p=0.000$). When SBP increase for 1 mmHg, the risk of metabolic syndrome is increased by 2.80%, Exp (B)=1.028, the effect of TS was significant ± CI: 1.01-1.05, $p<0.01$ ($p=0.002$). During the increase in age for 1 year, the risk of metabolic syndrome is increased by 1.80%, Exp(B)=1.02, age-related impact was significant ± CI: 1.001-1.04, $p<0.05$ ($p=0.04$).

DISCUSSION

This is the first study of this size in the Republic of Macedonia, which addresses the prevalence of metabolic syndrome. In this study, we have calculated the prevalence of MetS and its specific components by sex and age groups. Our study sample of 630 individuals, selected from the primary health care register adjusted for age and sex, represents the total population of about 200,000 inhabitants in the district of Tetovo, in the north-western region of the Republic of Macedonia. To compare the prevalence values gained from our study, we have used studies from different countries that have used the same definition of criteria as well as populations with age groups approximately the same as those of our study. The prevalence of MetS for the district of Tetovo was 28.25%. In women, it was significantly higher than in men (34.06% vs. 22.26%). The largest number of people with MetS lived in rural areas (31.32% vs. 23.60% s). Differences on this issue are described by social, economic, and cultural factors [29-31].

The overall prevalence of MetS in our study is close to those of the region around. In Greece, according to the multicentric study, the overall prevalence according to the NCEP-ATP III definition was somewhat lower (24.5%) [22]. Lower prevalence of MetS was also in a study of 575 healthy individuals in Bulgaria (23%) [20]. However, the limit value for hyperglycemia in these two studies was 6.1 mmol/l (according to NECPT ATP III, 2001), whereas in our study it was 5.6 mmol/l (according to NECPT ATP III, 2005). This may be the reason for a higher prevalence in our study. In Romania, according to a study of 2200 people, prevalence was 24% [21]. However, while at these neighboring countries the prevalence of MetS in both sexes was approximately the same, in our study, the prevalence rate of MetS among women was significantly higher (34.06% vs. 22.12%) respectively. The reason was the difference in the prevalence of abdominal adiposity. In our study, it was significantly more present in women than in men (59.4%

vs. 26.5%) respectively. Such a report of significantly higher prevalence of MetS among women in relation to men was also reported in Iran (48.5% with 36.3% respectively), India (39.9% with 22.9%), China (Shanghai) (35.1% with 28.4%). In these studies, this difference in favor of a greater number of women with MetS is ascribed to socioeconomic and cultural factors [19,32,33]. We believe that these factors also influence the differences in our research. Otherwise, many studies have shown that in developed and developing countries education level and family income are important socioeconomic determinants in the occurrence of metabolic syndrome and stay at an inverse ratio to the prevalence of metabolic syndrome. This has been particularly pronounced among the women population [31,34-39].

On the other hand, comparison with Western European countries results that Mets prevalence is considerably lower than in ours. In the DECODE study, which included 9 cohorts from 7 studies across European countries, MetS prevalence was 15.7% in men and 14.2% in women [5]. In this study, diabetics were excluded, but the age of the population involved in these studies was older than ours (from 30 to 89 years). This difference in prevalence is thought to be attributed to the above-mentioned economic, social, and cultural differences. The results of the effect of these factors in our contingent of the studied population will be presented in our forthcoming work.

Several studies show an increase in the prevalence of MetS compared to the same earlier studies [23,40]. A growing trend is seen in emerging economies due to rapid urbanization, improved nutrition and the installation of Western living lifestyle, resulting in an increase in the number of obese [17,24]. On the other hand, in some countries, especially those of Western Europe, there has been a stagnation or decrease in the prevalence of MetS in recent years as a result of measures taken to combat specific risk factors as elements of the MetS [41]. For our region in the Republic of Macedonia, we have no earlier study with which we would compare the tendency of the prevalence of MetS.

Characteristic, of all studies on the prevalence of MetS, is the increase of prevalence rates in addition to the increase of age group. Even in our study, the ratio between the age ranges and the appropriate prevalence rates of MetS for $R=1.0$ ($p>0.05$) showed maximum positive correlation. In the age group of 30-39 years prevalence was higher in men (25% vs. 20.59%), whereas in the age group 40-49 years the prevalence of women was significantly higher (45.31% vs. 22.22%) and continued with this trend for the age group 50-59, 60-69 and for those over 70 years. A significant increase in prevalence among women in the age group 40-49, in our case, is mainly attributed to the component of abdominal obesity which marks a significant increase in women after 40 years of age.

When we analyze the prevalence of specific components, then in our sample, high blood pressure with 52.06% had the highest prevalence. However, abdominal adiposity predominates in women. More than half of the women in our study were with abdominal adiposity and almost half of them had high blood pressure and reduced HDL-C cholesterol. Of all components, a significant difference between women and men had only abdominal adiposity. This predominance in the prevalence of abdominal adiposity in the “favor” of the women population explains the cause of the higher prevalence of MetS in women. Prevalence of abdominal adiposity and hypertension were among the highest when compared to other studies

In our study, the population with two or more risk factors was 57.3%. This is certainly a significant indication! Although the prevalence of MetS at younger ages was in the rates indicated by other studies, what emerges in our study was a large number of individuals of young ages who had 1 and 2 components of MetS (20.26% of young people aged 20-29 years). The greatest contribution to MetS for young people in our study was dyslipidemia (decreased HDL-C and hypertriglyceridemia)

CONCLUSION

The results of this study showed for high rates of prevalence of the MetS, especially at female population of our area. Prevalence of arterial hypertension and abdominal obesity were among the highest reported. Such disturbing data certainly pose a challenge to the healthcare sector. Identifying entities with MetS, according to the NCEPT ATP III definition is fairly simple and low cost. This can be easily done at the primary (family) clinic, based on the results of common anthropometric and laboratory measurements. Advice on diet and lifestyle changes, in addition to pharmacological treatment, of this category, would contribute to the prevention of cardiovascular disease, type II diabetes, and complications from these diseases.

DECLARATIONS

Conflict of Interest

The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.

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