

Procena rizika za oboljevanje od dijabetesa melitusa tipa 2 u opštini Golubac

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Risk assessment for type 2 diabetes mellitus in the municipality of Golubac

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Sažetak

Uvod. U Srbiji se svake godine evidentira približno 17.000 novih slučajeva DM tip 2. Trećina novoobolelih već ima kasne komplikacije a gotovo polovina obolelih je starija od 65 godina.

Cilj. Utvrditi nivo i faktore rizika za oboljevanje od dijabetesa tipa 2 kod ispitanika različitog pola, starosti i životnih navika u opštini Golubac.

Metode. Istraživanje je sprovedeno korišćenjem Upitnika za procenu rizika dijabetesa tipa 2. Uzorak je formiran od 404 ispitanika koji su obuhvaćeni skriningom u opštini Golubac. U istraživanju su primenjene odgovarajuće statističke metode: frekvencija, t-test, ANOVA test i korelaciona analiza.

Rezultati. Istraživanje je pokazalo da najveći broj ispitanika (40,1%) ima lako povišen nivo rizika za oboljevanje od dijabetesa tipa 2, visok rizik ima 14,9%, a veoma visok 3,2%. Umeren nivo rizika ima 27,5% ispitanika, a 14,4% ima nizak rizik. Žene imaju veći procenat visokog i vrlo visokog rizika za oboljevanje od dijabetesa nego muškarci, ali ne postoji statistički značajna razlika između muškaraca i žena u pogledu rizika razvoja. Sa povećanjem starosti, kao i stepena gojaznosti, dolazi do rasta rizika za oboljevanje od dijabetesa tipa 2. Ispitanici koji upražnjavaju redovnu fizičku aktivnost, kao i oni koji redovno konzumiraju voće i povrće imaju manji rizik za oboljevanje od dijabetesa.

Zaključak. Istraživanje je pokazalo da skoro svaki peti ispitanik ima visok ili veoma visok rizik za oboljevanje od dijabetesa tipa 2, da je prekomerno uhranjeno 81,7% i da 75% ispitanika ima dijagnostikovane kardiovaskularne probleme. Evidentiranje osoba sa povećanim rizikom za oboljevanje od dijabetesa tipa 2 i njihovo dalje praćenje predstavlja značajan zadatak za izabrane lekare.

Ključne reči: dijabetes, skrining, faktori rizika, gojaznost

Abstract

Introduction. There are approximately 17.000 new cases of diabetes mellitus type 2 (DM2) in Serbia each year. A third of the newly diagnosed already has some late disease complications and almost half of them are over 65.

Objective. We aimed at determining the level and risk factors for DM2 in respondents of different gender, age, and lifestyle in the Municipality of Golubac.

Method. The study was conducted using the DM2 questionnaire. The sample had 404 participants who were screened in the Municipality of Golubac. Significant statistical methods were used in the study: frequency, t-test, ANOVA test, and correlation analysis.

Results. The study showed the majority of participants (40.1%) had slightly elevated risk for DM2, high risk was found in 14.9%, and very high risk in 3.2%. Moderate risk was found in 27.5% of the participants and 14.4% had low risk. Women had a higher percentage of high and very high risk for DM2 than men but no statistically significant difference was found between men and women concerning the risk of developing the disease. With age, as well as obesity, the risk for DM2 increases. The participants who practiced regular physical activity, as well as those who regularly consumed fruits and vegetables, had a lower risk for DM2.

Conclusion. The study showed almost every fifth participant had a high or very high risk for DM2, 81.7% were overweight, and 75% had previously diagnosed cardiovascular problems. Registration of persons with an elevated risk for DM2 and further follow-up is a very important task for GPs (general practitioners).

Keywords: diabetes, screening, risk factors, obesity

Uvod

Dijabetes melitus predstavlja jedno od najčešćih, najtežih i najkompleksnijih hroničnih nezaraznih oboljenja i veliki javnozdravstveni problem¹.

Stepen oboljevanja od dijabetesa je danas sve veći. Očekuje se da će u svetu do 2045. godine biti 700 miliona ljudi obolelih od ovog oboljenja². Prema poslednjim podacima Instituta za javno zdravlje u 2020. godini, u Republici Srbiji od dijabetesa boluje 770.000 ljudi, odnosno 12% populacije¹.

Procena je da u Srbiji 43% (330.000) osoba nema postavljenu dijagnozu i ne zna da boluje od dijabetesa tipa 2 (DM2)³. Prevalencija dijabetesa raste sa godinama starosti. Procenjuje se da je gotovo polovina obolelih starija od 65 godina. Kod starijih osoba obolelih od DM2, bolest se otkriva relativno kasno kada su već prisutne brojne kardiovaskularne i druge komplikacije.

Godišnje se u Srbiji u proseku evidentira približno 17.000 novih slučajeva tipa 2 dijabetesa. Trećina novoobolelih već ima kasne komplikacije¹. Dijagnoza se postavlja relativno lako, a neophodno je testiranje nivoa šećera u krvi⁴.

Za procenu rizika oboljevanja od DM2 primenjuju se testovi čiji rezultati omogućavaju procenu za oboljevanje od DM2 u narednim godinama. Najpoznatiji su upitnik Finske Dijabetološke Asocijacije (FINDRISK)⁵ - Diabetes Risk Test (ADA)⁶.

U primarnoj zdravstvenoj zaštiti u Srbiji se sprovodi Nacionalni program rane detekcije i prevencije DM2. Osobe starije od 45 godina se testiraju svake treće godine Upitnikom za procenu rizika za DM2 prema preporukama Nacionalnog vodiča za prevenciju DM2⁷.

Cilj

Cilj rada je da se ispita stepen rizika i faktori rizika za oboljevanje od dijabetesa tipa 2 kod stanovnika različitog pola, uzrasta i životnih navika.

Metode

Istraživanje je sprovedeno u toku 2020. godine i njime je obuhvaćeno 404 ispitanika na teritoriji opštine Golubac. U ovom istraživanju podaci su prikupljeni testiranjem stanovnika u opštini Golubac Upitnikom za procenu rizika za DM2. Upitnik je sastavni deo Nacionalnog vodiča za prevenciju DM2 u primarnoj zdravstvenoj zaštiti⁸. Upitnik sadrži osam pitanja (godine starosti, indeks telesne mase, obim struka, upražnjavanje fizičke aktivnosti svakodnevno u trajanju od 30 minuta, svakodnevni unos voća ili povrća, upotrebu antihipertenzivnih lekova, povišenu glikemiju pri rutinskom pregledu ili u trudnoći kod žena, prisustvo porodičnog opterećenja). Upitnike su popunjavali lekari anketirajući ispi-

Introduction

Diabetes mellitus is one of the most common, difficult, and complex chronic uncommunicable diseases and a huge public health problem¹.

The prevalence of diabetes is higher by the day. It is expected that by 2045 there will be 700 million people suffering from the disease all around the world². According to the latest data from the Institute of Public Health in 2020, 770.000 people are suffering from diabetes in the Republic of Serbia, which makes up 12% of the population¹.

It is estimated 43% (330.000) of the diseased in Serbia are not diagnosed and are unaware they suffer from diabetes mellitus type 2 (DM2)³. The prevalence of diabetes increases with age. The estimates are half of the diseased are over 65. In older persons, suffering from DM2, the disease is often found too late when there are numerous cardiovascular and other complications present.

There are approximately 17.000 new cases of DM2 in Serbia on a yearly bases. A third of the newly found already have late complications¹. The diagnosis is relatively easy and it requires testing the blood sugar level⁴.

The risk estimation for DM2 includes the use of tests whose results enable us to assess the risk in years ahead. The most popular are the questionnaires of the Finnish Diabetes Association (FINDRISK)⁵ and the Diabetes Risk Test (ADA)⁶.

The National program for early detection and prevention of DM2 is implemented in Serbia. Persons over 45 are tested every three years using the DM2 Risk Assessment questionnaire which is in line with the recommendations of the National guidelines for the prevention of DM2⁷.

Objective

We aimed at determining the level and risk factors for DM2 in respondents of different gender, age, and lifestyle.

Method

The study was conducted during 2020 and it included 404 participants from the Municipality of Golubac. The data in this study were collected by testing the participants using DM2 Risk Assessment Questionnaire in the Municipality of Golubac. The questionnaire is an integral part of the National guidelines for the prevention of DM2 in primary healthcare⁸. The questionnaire has eight questions (age, BMI, waist circumference, physical activity 30 minutes a day, everyday consumption of fruits and vegetables, the use of antihypertensive drugs, elevated glucose levels at routine check-ups or during pregnancy in women, and the presence of genetic burden). The questionnaires were filled in by the GPs who quizzed the

tanike u ordinacijama u Domu zdravlja Golubac, seoskim ambulantama i na organizovanim štandovima na otvorenom. Tom prilikom su ispitanicima izmereni telesna visina, telesna masa, obim struka i određena glikemija. Na osnovu rezultata upitnika procenjuje se rizik za razvoj DM2 u narednih deset godina kao nizak, lako povišen, umeren, visok ili vrlo visok. U istraživanju su primenjene odgovarajuće statističke metode: frekvencija, t-test, ANOVA test i korelaciona analiza. Zavisnu varijablu prilikom primene testova predstavlja rizik oboljevanja od dijabetesa, dok se kao nezavisne varijable javljaju indeks telesne mase, obim struka i gojaznost, konzumiranje voća i povrća, pri čemu je ispitana razlika između ispitanika koji su različitog pola i starosti. Obrada podataka je sprovedena u statističkom softveru SPSS V24. Radi efikasnije statističke analize, varijable su kodirane na sledeći način: Nizak rizik (1); Lako povišen (2); Umeren (3), Visok (4); Vrlo visok (5).

Rezultati

Uzorak čini 404 ispitanika, 59,4% ženskog i 40,6% muškog pola. Najviše je ispitanika starosti preko 64 godine (49,5%). Ispitanika od 45 do 54 godine je 25%, ispitanika starosti 55–64 godine je 23,3%. Najmanje je ispitanika koji imaju ispod 45 godina starosti (2,2%). Ukupno 52,5% ispitanika ima indeks telesne mase koji se nalazi u intervalu 25–30 kg/m², indeks telesne mase preko 30 kg/m² ima 29,2% uzorka, 81,7% ispitanika ima BMI veći od 25 kg/m². Od ukupnog broja, 94,6% ispitanika ističe da upražnjava minimum 30 minuta fizičke aktivnosti dnevno, dok 70% konzumira voće i povrće svakodnevno. Veliki broj ispitanika (75,2%) navodi da je nekada konzumiralo antihipertenzivne lekove. Povišen šećer u krvi je izmeren bar jednom u životu kod 9,9% ispitanika. U porodičnoj anamnezi, kod 22,9% ispitanika je neko u porodici imao dijabetes.

Rezultati analize u tabeli 1 pokazuju da najveći broj pacijenata ima lako povišen rizik za razvoj DM2 (40,1%). Potom dolaze pacijenti sa umerenim rizikom (27,5%). Pacijenti koji imaju visok rizik čine 14,9% pacijenata, dok pacijenti sa niskim rizikom čine 14,4% svih pacijenata. Najmanje pacijenata ima visok rizik razvoja DM2 (3,2%). Takođe, rezultati pokazuju da veći procenat žena ima visok i vrlo visok rizik za oboljevanje od dijabetesa nego muškarci. Kada se posmatra obim struka, analiza pokazuje da samo 15% žena i 10,4% muškaraca ima zadovoljavajući obim struka. Žene procentualno više uzimaju antihipertenzivne lekove nego muškarci.

participants in their offices in the Primary Healthcare Center (PHC) Golubac, rural clinics, and organized stalls in the open. They measured the participant's height, weight, waist circumference, and glycemia. Based on the results from the questionnaires, they assessed the participants' risk for DM2 in ten years time as low, slightly elevated, moderate, high, or very high. Significant statistical methods were used in the study: frequency, t-test, ANOVA test, and correlation analysis. The dependent variable in these tests was the diabetes risk, while the independent variables were Body Mass Index (BMI), waist circumference, obesity, and consumption of fruits and vegetables. They examined the difference between participants regarding their age and gender. Data analysis was performed in the statistical software SPSS V24. For the sake of more effective statistical analysis, variables were coded in the following manner: Low risk (1); Slightly elevated (2); Moderate (3), High (4); Very high (5).

Results

The sample consisted of 404 participants, 59.4% females, and 40.6% males. The majority of the participants were over 64 (49.5%). Those aged 45 to 54 made up 25%, and those 55–64, 23.3%. The least participants were under 45 (2.2%). A total of 52.5% of the participants had a BMI of 25–30 kg/m², those with BMI over 30 kg/m² were found in 29.2% of the participants, and 81.7% had BMI over 25 kg/m². Out of the total number, 94.6% pointed out they had physical activity, at least, 30 minutes/day, while 70% consumed fruits and vegetables every day. A large number of the participants (75.2%) said they used antihypertensive drugs, at some point. Hyperglycemia was found, at least once, in 9.9% of the participants. A family history of 22.9% of the participants revealed some of their family members had diabetes.

The analysis results in Table 1 show the majority of patients have a slightly elevated risk for DM2 (40.1%). The patients with moderate risk follow (27.5%). The patients with high risk make up 14.9%, while those with low risk make up 14.4% of all participants. The least number of patients have a very high risk for DM2 (3.2%). Also, the results show there is a higher percentage of females with high or very high risk for DM2 than males. Looking at the waist circumference, we found only 15% of females and 10.4% of males had desirable waist circumference. Females had a higher percentage of antihypertensive drugs use than males.

Tabela 1. Frekvencija nivoa rizika razvoja dijabetesa tipa 2
Table 1. Frequency of the level of risk of developing type 2 diabetes

Varijabla N (%) / Variable N (%)	Pol/ Gender	
	Muškarci/ Males	Žene/ Females
Nivo rizika/ Risk level	26 (10,8)	34 (14,2)
Visok rizik/ High risk	5 (2,1)	8 (3,3)
Vrlo visok rizik/ Very high risk		
Obim struka/ Waist circumference	17 (10,4)	36 (15)
< 94 (< 80)	77 (47)	91 (37,9)
94–102 (80–88)	70 (42,6)	113 (47,1)
> 102 (> 88)		
Uzimanje antihipertenzivnih lekova/ Use of antihypertensive medications		
Uzima lekove/ Take medications	121 (73,8)	183 (76,3)
Ne uzima lekove/ Take medications	43 (26,2)	57 (23,8)

Rezultati t-testa kojima su ispitane statistički značajne razlike između pojedinih varijabli i grupa ispitanika prikazani su u tabeli 2.

T-test results used to examine statistically significant differences between certain variables and groups of participants are shown in Table 2.

Tabela 2. Rezultati t-testa
Table 2. Results of the t-test

Rizik dijabetesa tipa 2 kod ispitanika različitog pola/ Risk of diabetes type 2 in participants of different genders		
Pol/ Gender	Aritmetička sredina/ Arithmetic mean	p vrednost/ p-value
Muškarci/ Males	2,51	0,694
Žene/ Females	2,55	
Uticaj fizičke aktivnosti na rizik oboljevanja od dijabetesa/ Influence of physical activity on diabetes risk		
Fizička aktivnost/ Physical activity	Aritmetička sredina/ Arithmetic mean	p vrednost/ p-value
Ispitanici koji redovno upražnjavaju fizičku aktivnost/ Participants who regularly practice physical activity	2,47	0,000***
Ispitanici sa sedentarnim načinom života/ Participants with sedentary lifestyle	3,33	
Konzumacija voća i povrća i rizik oboljevanja od dijabetesa/ Consumption of fruits and vegetables and diabetes risk		
Način ishrane/ Dietary habits	Aritmetička sredina/ Arithmetic mean	p vrednost/ p-value
Ispitanici koji redovno konzumiraju voće i povrće/ Participants who regularly consume fruits and vegetables	2,44	0,021**
Ispitanici koji neredovno konzumiraju voće i povrće/ Participants who irregularly consume fruits and vegetables	2,70	

Napomena:

Rezultati su značajni na nivou 0,05; /Results are relevant on level 0.05;

***Rezultati su značajni na nivou 0,001/**Results are relevant on level 0,001

Rezultati t-testa u tabeli 2 pokazuju da ne postoji statistički značajna razlika između muškaraca i žena u pogledu rizika za oboljevanje od DM2. Takođe, rezultati t-testa pokazuju da postoji uticaj fizičke aktivnosti na rizik za oboljevanje od dijabetesa. Oni ispitanici koji redovno upražnjavaju fizičku aktivnost imaju manji rizik za oboljevanje od dijabetesa. Analiza uticaja svakodnevnog unosa voća i povrća u ishrani pokazala je da se rizik za oboljevanje smanjuje sa redovnom konzumacijom voća i povrća.

T-test results in Table 2 show there is no statistically significant difference between males and females regarding DM2 risk. T-test results also show there is an influence of physical activity on diabetes risk. Those participants who have regular physical activity have a lower risk of diabetes. Analysis of the influence of everyday intake of fruits and vegetables showed diabetes risk was lower in those with regular consumption of fruits and vegetables.

Tabela 3. Rezultati ANOVA testa: rizik oboljevanja od DM2 kod ispitanika različite starosti
Table 3. Results of the ANOVA test: the risk of developing DM 2 in subjects of different ages

Grupe poređenja/ Compared groups	Aritmetička sredina/ Arithmetic mean	p vrednost/ p-value
Do 45 godina i 45–54 godine starosti/ Up to 45 and 45–54 years of age	Do 45 god = 1,55/ Up to 45 = 1.55	0,601
Do 45 godina i 55–64 godine starosti/ Up to 45 and 55–64 years of age	45–54 god = 2,09/ 45–54 = 2.09	0,018*
Do 45 godina i preko 64 godine starosti/ Up to 45 and over 64 years of age	55–64 god = 2,61/ 55–64 = 2.61	0,003*
45–54 godine i 55–64 godine starosti/ 45–54 and 55–64 years of age	Preko 64 god = 2,78/ Preko 64 = 2.78	0,000**
45–54 godine i preko 64 godine starosti/ 45–54 and over 64 years of age		0,000**
55–64 i preko 64 godine starosti/ 55–64 and over 64 years of age		0,578

Napomena:

*rezultati su značajni na nivou 0,05; **nivo 0,001/ Note: *results are relevant on level 0.05; **level 0.001

Rezultati ANOVA testa, prikazani u tabeli 3, pokazuju da postoji statistički značajna razlika između ispitanika različite starosti u pogledu rizika za razvoj dijabetesa. Kod ispitanika koji imaju preko 64 godine javlja se najviša vrednost aritmetičke sredine (2,78), dok kod ispitanika koji imaju od 55 do 64 godine ta vrednost iznosi 2,61. Između ove dve grupe ispitanika ne postoje statistički značajne razlike.

Da bi se utvrdila povezanost između gojaznosti (merene putem indeksa telesne mase - BMI) i rizika oboljevanja od dijabetesa, kao i povezanost obima struka i rizika oboljevanja od dijabetesa primenjena je korelaciona analiza, čiji su rezultati prikazani u tabeli 4.

Results of the ANOVA test are shown in Table 3 and they point to statistically significant differences between participants of different ages regarding diabetes risk. In participants over 64, the highest value of arithmetic mean appears (2.78), while in the participants of 55 to 64 that value is 2.61. Between these two groups, there is no statistically significant difference.

To establish the connection between obesity (measured by Body Mass Index - BMI) and diabetes risk, as well as the connection between waist circumference and diabetes risk we applied correlation analysis, and its results are shown in Table 4.

Tabela 4. Korelacija gojaznosti i rizika oboljevanja od DM 2
Table 4. Correlation between obesity and the risk of developing DM 2

	BMI	Rizik od dijabetesa/ Diabetes risk	Obim struka/ Waist circumference
BMI	1	0,540**	0,501**
Rizik od dijabetesa/ Diabetes risk	0,540**	1	0,475**
Obim struka/ Waist circumference	0,501**	0,475**	1

Napomena:

**Rezultati su značajni na nivou 0,01/ Note: **Results are relevant on level 0.01

Korelacija na nivou 0,5–1 se može označiti kao visoka.

Correlation on levels 0.5–1 could be labeled as high

Diskusija

Najveći broj ispitanika (40,1%) ima lako povišen nivo rizika za oboljevanje od dijabetesa tipa 2, visok rizik ima 14,9%, a veoma visok 3,2% (visok i veoma visok 18,1%). Umeren nivo rizika ima 27,5% ispitanika, a 14,4% ima nizak rizik. Iako frekvencija pokazuje da žene imaju veći procenat visokog i vrlo visokog rizika za oboljevanje od dijabetesa nego muškarci, rezultati t-testa pokazuju da ne postoji statistički značajna razlika između muškaraca i žena u pogledu rizika razvoja dijabetesa tipa 2. Dobijeni rezultati su identični studiji koja je sprovedena u Pomoravskom regionu⁸ i slični su onim koji su utvrđeni istraživanjima u Sjedinjenim Američkim Državama⁶. Međutim, postoje istraživanja i sa drugačijim rezultatima^{9,10}.

Sa povećanjem broja godina raste stepen oboljevanja od DM2. Dobijeni rezultati pokazuju da se rast stepena rizika oboljevanja od DM2 javlja posle 55. godine starosti. Dobijeni rezultat u skladu je sa sličnim studijama^{1,3,7,11}.

Utvrđeno je da je visoka pozitivna korelacija između gojaznosti i rizika za razvoj dijabetesa tipa 2 (0,540) i visoka pozitivna korelacija između indeksa telesne mase i obima struka (0,501). Ti rezultati odgovaraju teorijskim saznanjima i rezultatima sličnih studija^{11,12,13}. Umerena pozitivna korelacija između obima struka i rizika od dijabetesa (0,475) dobijena u rezultatima ovog istraživanja se razlikuje od rezultata sličnih istraživanja, gde je pronađena jaka povezanost³. Činjenica da je 94,6% ispitanika navelo da ima svakodnevnu fizičku aktivnost i da 70% redovno konzumira voće i povrće nameće zadatak da se odgovori da li su ti odgovori iskreni ili postoji neki drugi razlog nesklada naizgled zdravog stila života i prekomerne uhranjenosti (81,7%).

Ispitanici koji su fizički aktivni imaju manji rizik za

Discussion

The majority of participants (40.1%) have a slightly elevated diabetes risk. High risk is found in 14.9%, and very high in 3.2% of the participants (high and very high risk 18.1%). Moderate risk is found in 27.5% of the participants, and 14.4% have low risk. Although frequency shows females have a higher percentage of high and very high diabetes risk than males, t-test results show there is no statistically significant difference between males and females regarding diabetes risk. The results are identical to the study conducted in Pomoravski region⁸ and are similar to the ones found in the United States of America⁶. Nevertheless, there are studies with different results^{9,10}.

With age, the diabetes rate increases. Our results show the level of diabetes risk increases after 55 years of age. Our results are in line with similar studies^{1,3,7,11}.

A high positive correlation was confirmed between obesity and diabetes risk (0.540) and Body Mass Index and waist circumference (0.501). Those results are in line with theoretical knowledge and results of similar studies^{11,12,13}. A moderate positive correlation between waist circumference and diabetes risk (0.475), obtained in the results of this study, differs from the results of similar studies where a strong correlation was found³. The fact that 94.6% of the participants stated they had everyday physical activity and 70% regularly consumed fruits and vegetables imposes the task of finding out whether these answers were true or if there is some other reason for the discrepancy between seemingly healthy lifestyle and being overweight (81.7%).

The physically active participants had lower diabetes risk, which is in line with the results of similar studies^{12,14,15}. Certain studies show there is no difference between dietary

oboljevanje od dijabetesa, što je u skladu sa rezultatima sličnih istraživanja^{12,14,15}. Određene studije pokazuju da ne postoji razlika u načinu ishrane i rizika za oboljevanje od dijabetesa³. Rezultati ovog istraživanja su pokazali da redovna konzumacija voća i povrća smanjuje rizik za oboljevanje od dijabetesa, što je u skladu sa rezultatima studije sprovedene u Pomoravskom okrugu⁹.

U porodičnoj anamnezi, kod 22,9% ispitanika je neko u porodici imao dijabetes što je veći procenat u odnosu na procenat osoba sa visokim i vrlo visokim rizikom za oboljevanje od DM tipa 2 (18,1%), što verovatno znači da se određenim zdravim stilovima života rizik za oboljevanje održava na nižem nivou¹⁶.

Kliničke studije su pokazale da se pojava dijabetesa može sprečiti, u više od polovine osoba sa predijabetesom, promenom stila života⁵. Ovakvo istraživanje treba sprovoditi češće kako bi se utvrdilo da li je došlo do smanjenja ili povećanja nivoa rizika u toku vremena.

Zaključak

Istraživanje je pokazalo da skoro svaki peti ispitanik ima visok ili veoma visok rizik za oboljevanje od DM2, da je prekomerno uhranjeno 81,7% i da 75% ispitanika ima dijagnostikovane kardiovaskularne probleme. Evidentiranje osoba sa povećanim rizikom za oboljevanje od DM2, njihovo dalje praćenje, kontrola glikemije i preporuke za korekciju loših navika predstavlja značajan zadatak za izabrane lekare. Rezultate i odgovore iz upitnika treba evaluirati i analizirati.

habits and diabetes risk³. The results of this study showed regular consumption of fruits and vegetables lowered the risk of diabetes, which is in line with the results from the Pomoravski region⁹.

The family history of 22.9% of the participants showed someone in their family suffered from diabetes, which is a higher percentage than the percentage of participants with high and very high diabetes risk (18.1%). This probably means that some healthy lifestyles could lower diabetes risk¹⁶.

Clinical studies showed diabetes could be prevented in more than half of the persons with prediabetes by changing their lifestyle⁵. This type of research should be performed more often so we could determine whether there has been a decrease or an increase in risk levels over time.

Conclusion

Our study showed every fifth participant had a high or very high diabetes risk, 81.7% of the participants were overweight, and 75% had a diagnosed cardiovascular problem. Registration of the persons with increased diabetes risk, their further follow-up, glycemic control, and recommendations for the correction of bad habits represent an important task for GPs. The results and answers from the questionnaire should be evaluated and analyzed.

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