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Centralna gojaznost kod normalno uhranjenih odraslih pacijenata u primarnoj zdravstvenoj zaštiti

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Central obesity in adult patients with optimal weight in primary health care

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Sažetak

Uvod. Pojedinci sa normalnom telesnom težinom i povećanim obimom struka imaju 20% veći rizik za nastanak oboljenja od lica sa normalnom telesnom težinom i obimom struka.

Cilj rada. Ispitati stepen uhranjenosti i učestalost centralne gojaznosti kod normalno uhranjenih odraslih pacijenata Doma zdravlja Novi Sad i da li postoje razlike u odnosu na pol i godine starosti.

Metod. Retrospektivna analiza antropometrijskih podataka, evidentiranih u elektronskom zdravstvenom kartonu 39.751 odraslog pacijenta.

Rezultati. Analizirani su podaci 23.264 žena i 16.487 muškaraca. Prosečna starost ispitanika iznosila je 53,8 godina (SD 15,419). Prosečna vrednost indeksa telesne mase – ITM iznosila je 26,5 kg/m^2 (SD 4,73), a obima struka 90,1 *cm* (SD 14,25001). Normalno uhranjenih ispitanika muškog pola bilo je 28,8% i ženskog pola 46,1%. Postoji značajna statistička razlika u stepenu uhranjenosti u odnosu na pol i godine starosti ($p<0,005$). Centralnu gojaznost imalo je 21,2% normalno uhranjenih osoba muškog pola i 37,0% ženskog pola. U grupi normalno uhranjenih pacijenata sa centralnom gojaznošću, 79,7% činile su osobe ženskog pola a 20,3% muškog pola. U ovoj grupi pacijenata centralna gojaznost je najzastupljenija u starosnoj grupi od 60 do 69 godina. Postoji statistička značajna razlika u odnosu na pol i starosnu grupu ($p<0,005$).

Zaključak. Imajući u vidu da je više od trećine normalno uhranjenih ispitanika imalo centralnu gojaznost, radi utvrđivanja rizika za nastanak hroničnih masovnih nezaraznih bolesti povezanih sa centralnom gojaznošću, pored određivanja indeksa telesne mase-ITM neophodno je i rutinsko merenje obima struka.

Ključne reči. uhranjenost, gojaznost, obim struka, gojaznost u normalnoj telesnoj masi, ITM.

Abstract

Introduction: There are people with optimal body weight and exceeding waist circumference and they`ve got a 20% higher risk of developing the disease as compared to people with optimal weight and waist circumference.

Objective: Examine the nutritional status and the prevalence of central obesity in optimally fed adult patients of Primary Health Center (PHC) Novi Sad and find out whether there were differences when age and sex were taken into account.

Method: Retrospective analysis of the anthropometric data recorded in the electronic health records (EHR) of 39.751 adult patients.

Results: We analyzed the data of 23.264 women and 16.487 men. The average age of the participants was 53.8 years (SD 15.419). The average body mass index (BMI) was 26,5 kg/m^2 (SD 4,73), and waist circumference 90,1 *cm* (SD 14,25001). There were 28.8% of the male patients and 46.1% of the female patients with optimal body weight. There was a significant statistical difference in the nutritional status levels with respect to sex and age ($p<0.005$). Central obesity was found in 21.1% of optimally fed males and 37.0% of females. In the group of optimally fed patients with central obesity, 79.7% were females and 21.3% males. In this group of patients, central obesity was the most frequent in the 60-69 age group. There is a statistically significant difference in relation to gender and age group ($p<0.005$).

Conclusion: We found a third of patients with normal body weight had central obesity. In order to calculate the risk for chronic non-communicable diseases, besides BMI, we should also take into account a routine measurement of the waist circumference.

Keywords: Nutrition, obesity, waist circumference, obesity with normal body weight, BMI

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Uvod

Prekomerna telesna težina i gojaznost su definisani kao neuobičajena ili prekomerna akumulacija masti koja može ugroziti zdravlje, a zbog porasta broja obolelih postala je globalni zdravstveni problem[1,2].

Prema podacima Svetske zdravstvene organizacije (SZO) od 1975. godine, broj gojaznih ljudi u svetu se skoro utrostručio. Godine 2016. više od 1,9 milijardi osoba starosti od 18 godina i starijih imalo je prekomernu težinu, od toga je preko 650 miliona bilo gojazno[3].

Prema kriterijumima Svetske zdravstvene organizacije, gojaznost se definiše kao vrednost indeksa telesne mase (ITM) ≥30 *kg/m*^{2}, koji je isti za oba pola i za sve dobne grupe. Iako se ovaj metod najčešće koristi u kliničkoj praksi, ima ograničenja jer možda ne odgovara istom stepenu masnoće kod različitih pojedinaca. Zbog toga se za definisanje i klasifikovanje gojaznosti koriste i drugi parametri, kao što su obim struka, odnos kuka prema struku ili procenat telesne masti[3,4]. Obim struka je jednostavan i za rad u primarnoj zdravstvenoj zaštiti, klinički koristan surogat marker za procenu veličine abdominalne masne mase, koji se može koristiti za procenu kardiometaboličkih rizika povezanih s raspodelom telesne masti[5].

Prekomerna telesna težina i gojaznost su glavni faktori rizika za nastanak čitavog niza hroničnih masovnih nezaraznih oboljenja.[6-8]. Važno je naglasiti da rizik od kardiometaboličke multimorbidnosti raste kako raste ITM; od dvostrukog kod pacijenata sa prekomernom telesnom masom do više od deset puta kod ekstremno gojaznih pacijenata u poređenju sa normalno uhranjenim osobama[9].

S kliničkog aspekta, prema definiciji IDF (International Diabetes Federation), preko obima struka (za evropsko područje ≥94 *cm* za muškarce i ≥80 *cm* za žene) koji je definisan u odnosu na etničku pripadnost, abdominalna, centralna gojaznost, dobija mesto neophodnog parametra za postavljanje dijagnoze metaboličkog sindroma. Glavne dijagnostičke komponente metaboličkog sindroma, pored obima struka, jesu nivo triglicerida >1.7 *mmol/L*; snižene vrednosti HDL holesterola <1.03 *mmol/L* za muškarce i <1.29*mmol/L* za žene; vrednosti krvnog pritiska ≥130 *mmHg* za sistolni KP i/ili ≥ 85 *mmHg* za dijastolni KP ili prethodna terapija antihipertenzivnim lekovima; povišene vrednosti glukoze u krvi ≥5.6 *mmol/*ili prethodno dijagnostikovan dijabetes melitus tip 2. Korišćenjem međunarodno prihvaćenih graničnih vrijednosti za obim struka, metabolički sindrom udvostručuje rizik od kardiovaskularnih bolesti[10,11]. Takođe, postoji jaka korelacija između centralne gojaznosti, hipertenzije, kardiovaskularnih oboljenja, hiperlipoproteinemija, dijabetesa tip 2, tromboze vene porte i maligniteta dojke[12-16].

Studija Hjua (*Hu*) i saradnika iz 2016. godine ukazala je da je abdominalna gojaznost u značajnijoj meri povezana s dijabetesnom bolesti bubrega od opšte gojaznosti[17]. Centralna

Introduction

Overweight and obesity are defined as an unusual or excessive accumulation of fats, which may endanger one`s health, and due to the worldwide spread of the disease it has become a global problem[1,2].

According to the WHO (World Health Organisation) data from 1975, the number of obese people in the world almost tripled. In 2016 more than 1.9 billion people, aged 18 and older were overweight, and among them 650 millions were obese[3].

According to the WHO criteria, obesity is defined as a BMI ≥ 30 kg/m^2 and it goes for both genders and all age groups. Although this method is the most common in clinical practice, it has its limitations because it doesn`t take into account the same percentages of fats in different individuals. So, in order to define and classify obesity other parameters should be considered, such as waist circumference (WC), hip to waist ratio, or the percentage of body fat[3,4]. Measuring waist circumference in primary health care (PHC) is easy and it is a useful clinical surrogate marker for the evaluation of the abdominal fat. It may be used for the evaluation of the cardiometabolic risk related to the distribution of body fat[5].

Overweight and obesity are the main risk factors for many non-communicable diseases[6-8]. It is important to stress the risk of cardiometabolic multimorbidity increases with the increase of BMI; it`s twice as high in the overweight patients to more than ten times higher in excessively obese patients, when compared to people with optimal weight[9].

From the clinical aspect, according to the IDF (International Diabetes Federation), the waist circumference (≥ 94 cm for men and ≥80 cm for women, in Europian countries) which is defined in relation to ethnicity, abdominal, central obesity is gaining a place of a necessary parameter essential for the diagnosis of metabolic syndrome. The main diagnostic components of the metabolic syndrome, besides waist circumference, are triglycerides levels > 1.7 mmol/l; HDL levels < 1.03 mmol/l for men and < 1.29 mmol/l for women; SBP values ≥ 130 mmHg and/or DBP ≥ 85 mmHg or previous antihypertensive therapy; glucose levels ≥ 5.6 mmol/l or previously diagnosed type 2 diabetes. Using the internationally accepted waist circumference threshold values, it was found the metabolic syndrome doubles the risk of cardiovascular diseases[10,11]. Also, there is a strong correlation between central obesity, hypertension, cardiovascular diseases, hyperlipoproteinemia, type 2 diabetes, port vein thrombosis, and breast cancer[12-16].

The study of Hu et al. in 2016 proved that abdominal obesity had a significant connection with diabetic nephropathy in generally obese individuals.[17] Central obesity was also connected to the higher risk of cardiovascular death[8-22].

Also, it was found the individuals with the optimal body weight or BMI and enlarged waist circumference had a 20%

gojaznost je takođe povezana sa višim rizikom od kardiovaskularne smrti[8-22].

Takođe, utvrđeno je da pojedinci s normalnom telesnom težinom, odnosno indeksom telesne mase (ITM) i povećanim obimom struka, imaju 20% veći rizik za nastanak oboljenja od osoba sa normalnom telesnom težinom i obimom struka[23]. Studija Suna (*Sun***)** i saradnika objavljena 2019. godine, ukazala je da su žene u postmenopauzi sa abdominalnom gojaznošću a normalne težine, izložene većem riziku od smrtnosti od svih uzroka, kardiovaskularnih bolesti i smrtnosti od raka u poređenju sa ženama s normalnom težinom bez abdominalne gojaznosti[24].

Cilj rada

Cilj ovog rada je da se ispita stepen uhranjenosti i učestalost centralne gojaznosti kod normalno uhranjenih odraslih stanovnika Novog Sada i okolnih prigradskih naselja, pacijenata Doma zdravlja Novi Sad i da li postoje razlike u odnosu na pol i godine starosti.

Metod

Retrospektivna analiza podataka o telesnoj visini, telesnoj težini, vrednostima ITM i obima struka evidentiranih u elektronskom kartonu 39.751 odraslog pacijenta Doma zdravlja Novi Sad.

Antropometrijska merenja odraslih pacijenata DZ Novi Sad, koja uključuju merenje telesne visine (TV), telesne mase (TM), obima struka (OS) i izračunavanje vrednosti indeksa telesne mase, vršena su u okviru svakodnevnog rada timova izabranih lekara i svi podaci su registrovani u elektronskom kartonu pacijenata.

Radi procene stepena uhranjenosti, izračunavan je indeks telesne mase po formuli TM (*kg*)/TV (*m*)^2. Stepen uhranjenosti procenjen je na osnovu kriterijuma Svetske zdravstvene organizacije: ITM <18,5 *kg/m*^{2} označavao je pothranjenost, između 18,5 *kg/m*^{2} i 24,9 *kg/m*^{2} normalnu uhranjenost, vrednosti između 25 *kg/m*^{2} i 29,9 *kg/m*^{2} - predgojaznost, a ≥30 *kg/m*^{2} gojaznost[1]. Za procenu postojanja centralne gojaznosti korišćena je vrednost obima struka prema kriterijumima Međunarodne dijabetološke federacije (International Diabetes Federation - IDF) za metabolički sindrom i evropsko područje, odnosno vrednosti ≥94 *cm* za muškarce i ≥80 *cm* za žene[9]. Antropometrijska merenja služe za skrining lica koja su pothranjena ili prekomerno uhranjena, ali se za procenu nutritivnog statusa, pored antropometrijskih merenja koriste i biohemijske analize, klinički pregled, demografski podaci i uticaj spoljne sredine i kulturoloških faktora[25].

Za merenje telesne mase (TM) korišćena je medicinska vaga s preciznošću merenja od 0,1 *kg.* Merenje telesne visine (TV) vršeno je u stojećem stavu, sa preciznošću merenja od 0,1 *cm*.

higher risk of getting ill as compared with individuals with the optimal weight and waist circumference[23]. The study of Sun et al. in 2019 pointed that menopausal women with abdominal obesity and optimal body weight had a higher risk of death of all causes, cardiovascular diseases, and death from cancer, as compared to women with optimal body weight but without abdominal obesity[24].

Objective

We aimed at investigating the nutrition level and the prevalence of central obesity in the PHC "Novi Sad" patients with optimal body weight and whether there was a difference in relation to gender and age.

Method

The retrospective analysis of the EHR database of the 39.751 adult patients of the PHC "Novi Sad". We took into account their body weight, height, BMI, and waist circumference. The anthropometric measurements of the patients (weight, height, waist circumference, BMI) are a part of daily activities in our PHC and all the data are safely stored in the patients` EHRs.

BMI was calculated to estimate the nutritional status (BMI = body weight/body height^2, kg/m^2). The nutritional status was estimated using the WHO`s criteria: BMI < 18.5 kg/m^2 means a patient is underweight, BMI between 18.5-24.9 kg/m^2 means a patient has optimal weight, BMI between 25-29.9 kg/m^2 signifies pre-obesity, and BMI ≥ 30 kg/m^2 means the patient is obese[1]. To estimate the presence of the central obesity we measured waist circumference, using the IDF metabolic syndrome criteria for the Europian area (waist circumference for men ≥ 94cm, women ≥ 80cm)[9]. The anthropometric measurements are used to screen for the underweight or overweight patients, but also to evaluate the nutritional status. Besides anthropometric measurements, lab tests, physical examinations, demographic data, the influence of the environment and the cultural factors should also be taken into account[25].

To measure body weight, we used the medical scale with the measuring accuracy of 0.1kg. Body height was measured in the standing position, with the measuring accuracy of 0.1cm. Waist circumference was measured by using measuring tape with the measuring accuracy of 0.1cm, at the level of the mid-range between the lowest point of the rib cage and the top of the hip bone.

The gathered data were entered into the specifically designed database and analyzed using statistical package SPSS for Windows.

Merenje obima struka vršeno je nerastegljivom trakom s preciznošću merenja od 0,1 *cm*, u nivou sredine rastojanja najniže tačke na rebarnom luku i najviše tačke na bedrenom grebenu karlične kosti.

Podaci prikupljeni tokom istraživanja, unošeni su u posebno osmišljenu bazu podataka i analizirani primenom statističkog paketa SPSS for Windows.

Deskriptivna statistika obuhvatila je prikaz minimalnih, maksimalnih i srednjih vrednosti, kao i standardne devijacije. Od testova za procenu statističke značajnosti korišćeni su neparametarski Pirsonov *(Pearson)* χ^2-test i Fišerov *(Fisher)* test. Rezultati su prikazani tabelarno. Za korišćenje podataka iz elektronske.baze podataka dobijena je saglasnost Etičke komisije DZ Novi Sad.

Rezultati

Prikupljeni su podaci 39.842 pacijenta Doma zdravlja Novi Sad, od kojih je pravilno popunjeno 39.751. Analizirani su podaci 23.264 (58,52 %) osoba ženskog pola i 16.487 (41,48%) osoba muškog pola. Minimalna starost ispitanika bila je 18, maksimana 105 godina, a prosečna starost 53,77 godina (SD 15,419). Minimalna vrednost ITM iznosila je 11,65 *kg/m*^{2}, maksimalna 69,79 *kg/m*^{2}, prosečna vrednost 26,51 *kg/m*^{2} (SD 4,73), (Tabela 1).

The descriptive statistics included minimal, maximal, and mean values, as well as standard deviation. For the evaluation of the statistical significance, we used Pearson`s non-parameter $X^2$-test and Fischer`s test. The results were shown in the tables. The Ethical Board of the PHC Novi Sad permitted the use of the patients` data from EHRs.

Results

We gathered the data of 39.842 patients from PHC Novi Sad, of whom 39.751 patients` data were properly entered. We analyzed the data of 23.264 (58.52%) female patients and 16.487 (41.48%) male patients. The youngest participant was 18, and the eldest 105, and the average age was 53.77 (SD 15.419). The lowest BMI was 11.65 kg/m^2 and the maxim 69.79 kg/m^2, and the average BMI was 26.51 kg/m^2 (SD 4.73), (Table 1).

Tabela 1. Telesna uhranjenost u odnosu na pol i starosno doba
Table 1. Nutritional status in relation to gender and age

			ITM/BMI (*kg/m*^{2})				
			< 18,5	**18,5-24,9**	**25,0 -29,9**	**≥30,00**	
Pol *Gender*	Muški/*Male*	N	79	4756	7961	3691	χ^2 =1738.856 df=3 p<0,005
		%	0.5	28.8	48.3	22.4	
	Ženski/F*emale*	N	629	10714	7337	4584	
		%	2.7	46.1	31.5	19.7	
Starosno doba *Age*	18-29	N	163	1618	559	164	χ^2 =3250.719 df=21 p<0,005
		%	6.5	64.6	22.3	6.5	
	30-39	N	236	3344	1919	772	
		%	3.8	53.3	30.6	12.3	
	40-49	N	115	3187	2376	1216	
		%	1.7	46.2	34.5	17.6	
	50-59	N	92	2650	3259	1885	
		%	1.2	33.6	41.3	23.9	
	60-69	N	59	2806	4377	2743	
		%	0.6	28.1	43.8	27.5	
	70-79	N	32	1310	2169	1245	
		%	0.7	27.5	45.6	16.2	
	80-89	N	10	537	619	249	
		%	0.7	38.0	43.7	17.6	
	90-105	N	1	18	20	1	
		%	2.5	45.0	50.0	2.5	
Ukupno/*Total*		N	708	15470	15298	8275	39751
		%	1,8	38,9	38,5	20,8	100.0

Vrednost obima struka kretala se u rasponu od minimalnih 35 *cm* do maksimalniih 170 *cm*, sa prosečnom vrednošću od 90,09 *cm* (SD 14,25001). Prisustvo centralne gojaznosti, odnosno obima struka ≥ 80 *cm* za žene i ≥ 94 *cm* za muškarce u odnosu na pol i godine starosti, prikazana je u Tabeli 2.

Waist circumference values ranged from minimal 35cm to a maximum of 170 cm, with an average value of 90.09cm (SD 14.25001). The presence of central obesity, with a waist circumference of ≥ 80 cm for women, and ≥ 94 cm for men, in relation to gender and age are shown in Table 2.

Tabela 2. Centralna gojaznost u odnosu na pol i starosno doba
Table 2. Central obesity in relation to gender and age

			Centralna gojaznost (OS ≥80 *cm* (Ž) i OS ≥94 *cm* (M) *Central obesity (WC ≥80 cm (F) ; WC ≥94 cm (M)*		
			Ne	**Da**	
Pol *Gender*	Muški/*Male*	N	6710	9777	Fišerov test *Fisher test* p<0,005
		%	40.7	59.3	
	Ženski/*Female*	N	8179	15085	
		%	35.2	64.8	
Starosno doba *Age*	18-29	N	1778	726	χ^2 =3160.530 df=7 p<0,005
		%	71.0	29.0	
	30-39	N	3464	2807	
		%	55.2	44.8	
	40-49	N	2908	3986	
		%	42.2	57.8	
	50-59	N	2495	5391	
		%	31.6	68.4	
	60-69	N	2541	7444	
		%	25.4	74.6	
	70-79	N	1208	3548	
		%	25.4	74.6	
	80-89	N	470	945	
		%	33.2	66.8	
	90-105	N	25	15	
		%	62.5	37.5	
Ukupno/*Total*		N	14889	24862	39.751
		%	37.5	62.5	100.0

U populaciji normalno uhranjenih ispitanika oba pola, centralnu gojaznost imalo je ukupno 4.977 (32,17%). Prisustvo centralne gojaznosti u odnosu na pol i starosno doba u grupi pacijenata sa normalnom uhranjenošću prikazana je u Tabeli 3.

In the population of the participants of both genders, with the optimal weight, central obesity was found in 4.977 (32.17%). The presence of central obesity, in relation to gender and age, among the participants with optimal weight is presented in Table 3.

Tabela 3. Centralna gojaznost kod normalno uhranjenih osoba u odnosu na pol i starosnu dob
Table 3. Central obesity in optimal weight in relation to gender and age

			Centralna gojaznost OS ≥80 *cm* ((Ž) i OS ≥94 *cm* (M) *Central obesity (WC ≥80 cm (F) ; WC ≥94 cm (M)*		
			Ne	**Da**	
Pol *Gender*	Muški/*Male*	N	3748	1008	Fišerov test *Fisher test* p<0,005
		%	78.8	21.2	
	Ženski/*Female*	N	6745	3969	
		%	63.0	37.0	
Starosno doba *Age*	18-29	N	1373	245	χ^2 =543.750 df=7 p<0,005
		%	84.9	15.1	
	30-39	N	2543	801	
		%	76.0	24.0	
	40-49	N	2191	996	
		%	68.7	31.3	
	50-59	N	1646	1004	
		%	62.1	37.9	
	60-69	N	1619	1187	
		%	57.7	42.3	
	70-79	N	782	528	
		%	59.7	40.3	
	80-89	N	325	211	
		%	60.7	39.3	
	90-105	N	13	5	
		%	72.2	27.8	
Ukupno/*Total*		N	10493	4977	15.470
		%	67.8	32.2	100.0

U grupi normalno uhranjenih pacijenata sa centralnom gojaznošću bilo je 79,7% žena i 20,3% muškaraca. U odnosu na starosnu grupu, centralna gojaznost kod normalno uhranjenih osoba najzastupljenija je u grupi od 60 do 69 godina, (Tabela 4).

In the group of patients with optimal weight and central obesity, 79.7% were women and 20.3% were men. When compared to age, central obesity in participants with optimal weight was the most frequent in the 60-69 age group (Table 4).

Tabela 4. Distribucija normalno uhranjenih pacijenata sa centralnom gojaznošću u odnosu na pol i starosno doba
Table 4. Distribution of patients with optimal weight and central obesity in relation to gender and age

			Muški	**Ženski**	
Starosno doba *Age*	18-29	N	65	180	χ^2 =38.742 df=7 p<0,005
		% od pola/*of gender*	6.4	4.5	
		% od ukupnog broja/*of total number*	1.3	3.6	
	30-39	N	171	630	
		% od pola/*of gender*	17.0	15.9	
		% od ukupnog broja/*of total number*	3.4	12.7	
	40-49	N	172	824	
		% od pola/*of gender*	17.1	20.8	
		% od ukupnog broja/*of total number*	3.5	16.6	
	50-59	N	156	848	
		% od pola/*of gender*	15.5	21.4	
		% od ukupnog broja/*of total number*	3.1	17.0	
	60-69	N	262	925	
		% od pola/*of gender*	26.0	23.3	
		% od ukupnog broja/*of total number*	5.3	18.6	
	70-79	N	123	406	
		% od pola/*of gender*	12.1	10.2	
		% od ukupnog broja/*of total number*	2.5	8.2	
	80-89	N	59	152	
		% od pola/*of gender*	5.9	3.8	
		% od ukupnog broja/*of total number*	1.2	3.1	
	90-105	N	1	4	
		% od pola/*of gender*	0.1	0.1	
		% od ukupnog broja/*of total number*	0.0	0.1	
Ukupno/*Total*		N	1008	3969	4977
		% od pola/*of gender*	100.00	100.00	100.0
		% od ukupnog broja/*of total number*	20.3	79.7	100.0

Diskusija

Više od polovine odraslih pacijenata Doma zdravlja Novi Sad ima telesnu masu veću od normalne, pri čemu je oko jedne petine pacijenata gojazno, dok je nešto manje od dve petine normalno uhranjeno. Osobe muškog pola u većem procentu imaju prekomernu telesnu masu i gojaznost od osoba ženskog pola. Postoji značajna statistička razlika u stepenu uhranjenosti u odnosu na pol ($p<0,005$). Najveći procenat pothranjenih i normalno uhranjenih zastupljen je u populaciji starosti od 18 do 29 godina. U dobu od 70 do 79 godina je najveći procenat pacijenata sa prekomernom telesnom masom, dok je najveći procenat gojaznih u dobu od 60 do 69 godina. U stepenu uhranjenosti postoji statistički značajna razlika u odnosu na godine starosti ($p<0,005$). U posmatranom uzorku manji je procenat normalno uhranjenih a veći procenat onih sa povećanom telesnom masom, u odnosu na podatke dobijene tokom *Istraživanja zdravlja stanovnika Srbije* obavljenog 2013. godine[26]. Procena autora iz Hrvatske 2003. godine jeste da je 38,11% celokupnog stanovništva Hrvatske prekomerno uhranjeno i 20,34% gojazno, što je slično razultatima dobijenim našim istraživanjem[27].

Rečju, centralnu gojaznost prema posmatranim kriterijumima, imalo je oko 62% ispitanika. Nešto manje od dve trećine žena ima obim struka 80 *cm* ili više. U odnosu na starosno doba, centralna gojaznost je najzastupljenija u dobu od 60 do 79 godina. Postoji statistička značajna razlika u odnosu na pol i starosno doba u pogledu zastupljenosti centralne gojaznosti ($p<0,005$). Procenat muškaraca sa centralnom gojaznošću u ovom uzorku je veći a žena manji u odnosu na rezultate dobijene prilikom *Istraživanja zdravlja stanovnika Srbije* 2013. godine[26]. U poređenju sa ispitivanjem sprovedenim u Hrvatskoj 2003. godine, procenat osoba sa centralnom gojaznošću je znatno veći, što može biti posledica različitih kriterijuma za definisanje centralne gojaznosti (kriterijumi IDF *vs* kriterijumi WHO)[27].

Nešto više od jedne petine normalno uhranjenih muškaraca i jedne trećine normalno uhranjenih žena imalo je centalnu gojaznost. U studiji koju je sprovela Stokić EJ sa saradnicima 2002. godine, učestalost gojaznosti u normalnoj telesnoj masi bila je 32,89% kod osoba ženskog pola i 17,18% kod osoba muškog pola. Iako su dobijeni pokazatelji slični, ne mogu se u potpunosti porediti jer su u navedenoj studiji uzorak činili studenti IV i V godine Medicnskog fakulteta u Novom Sadu, i za procenu visceralnog masnog tkva korišćen je procenat masne mase tela određen metodom bioelektrične impedanse[28].

U grupi normalno uhranjenih pacijenata sa centralnom gojaznošću postoji statistička značajna razlika u odnosu na pol i starosnu grupu ($p<0,005$). Dobijeni podaci su u skladu sa podacima iz 2017. i 2019. godine koji, takođe, ukazuju da je abdominalna gojaznost česta na nivou primarne zdravstvene zaštite, kao i da je češća kod žena nego kod muškaraca[29,30].

Discussion

More than half of the adult patients from PHC Novi Sad were overweight, one fifth was obese, and less than two-fifths had optimal weight. Unlike females, males were more likely to be overweight or obese. There was a significant statistical difference in nutritional status in relation to gender ($p<0.005$). The largest percentage of the underweight or those with optimal weight was found in the 18-29 age group. The largest percentage of the overweight was found in the 70-79 age group and the obese in the 60-69 age group. There was a significant statistical difference in nutritional status in relation to age ($p<0.005$). There was a smaller percentage of those with optimal weight, than those who were overweight, in our sample, when compared to the findings of the *Health research of the Serbian inhabitants,* from 2013[26]. The assessment of the Croatian authors, from 2003, was that 38.11% of the Croatian population was overweight and 20.34% was obese, which is along the lines of our research[27].

Central obesity, according to the criteria, was found in 62% of the participants. Less than two-thirds of the females had a waist circumference of ≥ 80cm. In relation to age, central obesity was most frequent in the 60-79 age group. There was a statistically significant difference in the prevalence of central obesity, in relation to gender and age ($p<0.005$). The percentage of males with central obesity, in our sample, was higher than that of females when compared to the *Health research of the Serbian inhabitants,* from 2013.[26] When compared to the results of the Croatian research, from 2003, the percentage of our participants with central obesity was much higher, which can be attributed to different central obesity defining criteria (IDF vs. WHO criteria)[27].

More than a fifth of males and a third of females with optimal weight had central obesity. In the study of Stokic E.J. et al. from 2002, the incidence of obesity in optimal body mass was 32.89% in females and 17.18% in males. Although quite similar, these parameters could not be compared because their study participants were the students of the fourth and fifth year of the Medical school, Novi Sad, and for the assessment of the visceral fat they used the percentage of the fat body mass calculated by using bioelectric impedance[28].

In the group with optimal weight and central obesity, there was a statistically significant difference in relation to gender and age ($p<0.005$). Our data were consistent with data from 2017 and 2019 which also indicate the abdominal obesity was very frequent in PHCs, and more so in women than men[29,30].

Zaključak

Imajući u vidu da je više od trećine normalno uhranjenih ispitanika imalo centralnu gojaznost, radi utvrđivanja rizika za nastanak hroničnih masovnih nezaraznih oboljenja sa centralnom gojaznošću, pored određivanja ITM neophodno je i rutinsko merenje obima struka.

Ovakav rezultat takođe ukazuje na neophodnost intenzivnog preventivnog rada sa stanovništvom, kako bi se trajno usvojio zdrav način života i sprečilo nastajanje gojaznosti, ali i intenzivirao terapijski pristup u lečenju gojaznosti i smanjenju rizika za nastanak pridruženih bolesti.

Conclusion

Bearing in mind that more than a third of the participants with optimal weight had central obesity, and in order to assess the risk of the non-communicable diseases connected to it, besides BMI it is necessary to measure waist circumference as well.

Our results also indicate it`s necessary to step up our preventive activities with our patients, so they could acquire healthy lifestyles and prevent obesity. We should be also intensifying our therapeutic approach to treating obesity and lowering the risk of the appearance of the consequent diseases.

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