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Rano otkrivanje osteoporoze u ordinaciji lekara opšte medicine

Milena Lj. Kostić[1], Olga D. Radosavljević[2], Maja S. Vučković[3]

[1]Dom zdravlja „Dr Đorđe Kovačević“, Lazarevac, Beograd, Srbija
[2]Dom zdravlja „Dr Boško Vrebalov“, Zrenjanin, Srbija
[3]Dom zdravlja „Dr Milutin Ivković“, Palilula, Beograd, Srbija

Sažetak

Uvod. U nastanku osteoporoze značajnu ulogu imaju određeni faktori rizika čije rano prepoznavanje može uticati na pojavu, tok i ishod bolesti.

Cilj. Ispitati zastupljenost faktora rizika i osteoporoze kod žena u menopauzi u ordinaciji lekara opšte medicine.

Metod. Istraživanje je sprovedeno u ambulanti Doma zdravlja u Lazarevcu, u periodu septembar–decembar 2016. godine. Prikupljeni su podaci o faktorima rizika za osteoporozu dobijeni prilikom posete izabranom lekaru i korišćenjem medicinske dokumentacije. Ispitanice sa jednim ili više faktora rizika su upućivane na merenje mineralne gustine kosti (*Bone Mineral Density* - BMD) primenom DEXA, a prema nalazu BMD i faktorima rizika reumatologu. Podaci su analizirani deskriptivnom statistikom i metodama za testiranje statističkih hipoteza korišćenjem SPSS 20.

Rezultati. U istraživanju je učestvovalo 58 postmenopauzalnih žena starijih od 45 godina, prosečne starosti 65,62 godine. Najzastupljeniji faktori rizika bili su: rana menopauza (32,8%), pušenje cigareta (31,0%) i prisustvo hronične bolesti (25,9%). Jedan ili dva faktora rizika je imalo 51,7% žena, a tri i više faktora rizika njih 22,4%. Na DEXA je upućeno 72,4% ispitanica, a kod 35,7% je dijagnostikovana osteoporoza i započeto lečenje.

Zaključak. U ordinaciji lekara opšte medicine mogu se na jednostavan način otkriti osobe sa povećanim rizikom za osteoporozu ispitivanjem faktora rizika za njen nastanak. Daljom zdravstvenom intervencijom obezbeđuju se prevencija, blagovremena dijagnoza i lečenje ove bolesti.

Ključne reči: osteoporoza, faktori rizika, rana dijagnoza

Early detection of osteoporosis in a general practitioner’s office

Milena Lj. Kostic[1], Olga D. Radosavljevic[2], Maja S. Vuckovic[3]

[1]Primary Healthcare Center „Dr Djordje Kovacevic“, Lazarevac, Belgrade, Serbia
[2]Primary Healthcare Center „Dr Bosko Vrebalov“, Zrenjanin, Serbia
[3]Primary Healthcare Center „Dr Milutin Ivkovic“, Palilula, Belgrade, Serbia

Abstract

Introduction. Identifying certain risk factors for osteoporosis can greatly influence its occurrence, progression, and overall outcomes.

Objective. Our research focused on osteoporosis and its risk factors in menopausal women attending a general practitioner’s office.

Method. The research was conducted at the Primary Healthcare Center in Lazarevac from September to December 2016. We collected data on risk factors for osteoporosis during regular visits to general practitioners (GPs) and also utilized medical records. Participants who had one or more risk factors were referred for bone mineral density (BMD) measurement using DEXA scans. Based on the BMD findings and the identified risk factors, some participants were referred to a rheumatologist. Data were analyzed using descriptive statistics and statistical hypothesis testing methods in SPSS version 20.

Results. A total of 58 postmenopausal women over the age of 45 participated in our research, with an average age of 65.62 years. The most common risk factors identified were early menopause (32.8%), cigarette smoking (31.0%), and the presence of chronic diseases (25.9%). Among the participants, 51.7% had one or two risk factors, while 22.4% had three or more. Additionally, 72.4% of the participants were referred for DEXA scans, and osteoporosis was diagnosed in 35.7% of them, leading to the initiation of treatment.

Conclusion. Identifying individuals at risk for osteoporosis in a general practitioner’s office can be done easily by looking for specific risk factors. Early health interventions can lead to effective prevention, prompt diagnosis, and appropriate treatment of the disease.

Keywords: osteoporosis, risk factors, early diagnosis

Correspondence to:
Milena Kostic, MD, GP
Primary Healthcare Center „Dr Djordje Kovacevic“, Lazarevac, Belgrade
Porucnika Spasica i Masere 12, 11 147 Belgrade
Phone. 065/ 2501 723
e-mail: kmilena22@yahoo.com

Uvod

Osteoporoza je sistemsko metaboličko koštano oboljenje, koje karakterišu smanjenje koštane mase i poremećaj mikroarhitekture kostiju sa posledičnim smanjenjem koštane čvrstine i povećanim rizikom za prelom[1]. Osteoporoza može biti primarna i sekundarna, a najčešći oblici primarne su postmenopauzalna i senilna osteoporoza. U njenom nastanku značajnu ulogu imaju različiti nepromenljivi (starost, pol, rasa, genetska predispozicija, rani početak menopauze, određena hronična oboljenja i primena određenih lekova) i promenljivi faktori rizika (nizak indeks telesne mase, nizak unos kalcijuma putem hrane, neizlaganje sunčevim zracima ili nizak unos vitamina D, nedovoljna fizička aktivnost, prekomeran unos alkohola, pušenje)[2,3].

Prema podacima iz 2019. godine, u zemljama Evropske unije i Švajcarskoj i Ujedinjenom Kraljevstvu, procenjeno je da osteoporozu ima 25,5 miliona žena i 6,5 miliona muškaraca[4,5]. Kod starijih od 50 godina života, osteoporoza je zastupljena u Evropi kod oko 22,1% žena i 6,6% muškaraca[6]. Osteoporoza se najčešće razvija kod postmenopauzalnih žena i nažalost se i dalje često dijagnostikuje tek nakon preloma nastalog kao posledica osteoporozom izmenjenih kostiju[7]. Zbog toga se upravo i smatra jednim od najčešće neprepoznatih uzroka invaliditeta osoba starije životne dobi[8]. Pored toga što je veliki broj pacijenata sa osteoporozom nedijagnostikovan dok je ona u tzv. „tihoj fazi“, bez preloma, te su ovi pacijenti bez odgovarajuće terapije, značajan broj pacijenata sa dijagnostikovanom osteoporozom nakon preloma ne dobija terapiju ili prestaje sa korišćenjem terapije nakon 12 meseci[9,10]. Takođe, u velikom broju studija pokazano je da manje od 40% pacijenata na hroničnoj oralnoj terapiji glukokortikoidima biva testirano ili lečeno zbog osteoporoze[11]. U istraživanju sprovedenom u 27 zemalja Evropske unije, 10,6 miliona žena nije lečeno od ukupno 18,4 miliona žena koje je zbog povećanog rizika od nastanka preloma trebalo lečiti, kao što nije lečeno ni 1,7 miliona muškaraca od ukupno 2,9 miliona onih muškaraca koje je zbog povećanog rizika od preloma trebalo lečiti[5]. Nedavna istraživanja u našoj zemlji su otkrila generalno loše i oskudno znanje o osteoporozi kod žena u postmenopauzi u Srbiji[12,13].

Pored javnozdravstvenih aktivnosti potrebnih za povećanje svesti o značaju osteoporoze, ključnu ulogu kako u edukaciji pacijenata, tako i u ranom otkrivanju osteoporoze mogu imati upravo lekari opšte/porodične medicine. Ovu ulogu oni mogu ostvariti, između ostalog, svojim aktivnim delovanjem, zajedno sa svojim pacijentima, u ispitivanju faktora rizika za nastanak osteoporoze.

Cilj

Ispitati zastupljenost faktora rizika i osteoporoze kod žena u menopauzi u ordinaciji lekara opšte medicine.

Introduction

Osteoporosis is a systemic metabolic bone disease characterized by bone loss and a disruption of bone microarchitecture, which leads to decreased bone density and an increased risk of fractures.[1] There are two main types of osteoporosis: primary and secondary. The most common forms of primary osteoporosis are postmenopausal osteoporosis and senile osteoporosis. Several factors can contribute to the development of osteoporosis. Non-variable factors include age, gender, race, genetic predisposition, early onset of menopause, certain chronic diseases, and the use of specific medications. Variable factors include a low body mass index, inadequate dietary calcium intake, lack of sunlight exposure, insufficient vitamin D intake, inactivity, alcohol abuse, and smoking.[2,3]

It is estimated that in the European Union, Switzerland, and the United Kingdom, there are approximately 25.5 million women and 6.5 million men living with osteoporosis, according to data from 2019.[4,5] Among individuals over the age of 50, the prevalence of osteoporosis is around 22.1% in women and 6.6% in men.[6] Osteoporosis is most common in postmenopausal women; unfortunately, it is often diagnosed only after a fracture occurs due to weakened bones.[7] As a result, osteoporosis is considered one of the least recognized causes of disability in older adults.[8] In addition to the large number of undiagnosed patients who have osteoporosis during its “silent phase”—without experiencing fractures and without receiving appropriate treatment—there is also a significant proportion of patients who have been diagnosed after a fracture. Many of these individuals either do not receive therapy or discontinue it on their own after 12 months.[9,10]. Many studies indicate that fewer than 40% of patients who use oral corticosteroids chronically are tested or treated for osteoporosis.[11] A study conducted across 27 European countries revealed that out of 18.4 million women at increased risk for bone fractures, only 10.6 million received appropriate treatment. Similarly, among 2.9 million men who were at elevated risk for bone fractures, 1.7 million did not receive treatment.[5] Additionally, recent research in Serbia has shown a general lack of awareness and understanding of osteoporosis among postmenopausal women.[12.13]

In addition to public health initiatives aimed at raising awareness about the importance of osteoporosis, general and family physicians play a crucial role in patient education and the early diagnosis of the condition. They can actively work with their patients to identify risk factors for osteoporosis.

Objective

We investigated the prevalence of risk factors and osteoporosis in menopausal women visiting a general physician’s (GP) office.

Metod

Istraživanje je sprovedeno u ambulanti Stepojevac, Doma zdravlja „Dr Đorđe Kovačević" u Lazarevcu, u periodu septembar–decembar 2016. godine kod 58 postmenopauzalnih žena starijih od 45 godina. Istraživanje je sproveo jedan lekar u ambulanti opšte medicine kod pacijentkinja koje su ga izabrale za svog lekara opšte medicine, i sve su dobrovoljno pristale na predloženo ispitivanje. Podaci o faktorima rizika za nastanak osteoporoze dobijeni su anamnestički prilikom posete lekaru i korišćenjem dostupne medicinske dokumentacije. Dobijeni su podaci iz porodične anamneze o postojanju osteoporotičnih preloma i dijagnostikovanoj osteoporozi u porodici, podaci iz lične anamneze o ranijim prelomima, ranoj menopauzi (pre 45. godine života) i izostanku menstruacije duže od 12 meseci (osim zbog trudnoće, menopauze ili histerektomije), kao i o navikama koje se odnose na pušenje i redovno konzumiranje alkohola u većoj količini (više od dve jedinice dnevno). Registrovan je i podatak o smanjenju telesne visine za više od 3 cm, korišćenju glikokortikoidne terapije u toku tri ili više meseci neprekidno, zapaljenskoj reumatskoj bolesti, hipertireozi i čestim dijarejama ili dijagnostikovanoj bolesti creva praćenoj poremećajem apsorpcije. Svim pacijentkinjama je izračunat indeks telesne mase (*Body Mass Index* - BMI). U istom periodu ispitanice sa prisutnim jednim ili više faktora rizika su upućivane na merenje mineralne gustine kosti (*Bone Mineral Density* - BMD) na lumbalnoj kičmi i kuku metodom dvostruke apsorpciometrije X-zraka (*Dual-energy X-ray absorptiometry* - DEXA), a prema nalazu BMD i prisutnim faktorima rizika reumatologu. Kao standard za normalnu koštanu gustinu uzet je prosek koštane gustine mlade zdrave ženske osobe. Ta vrednost DEXA merenja se naziva T-skor, a odstupanje BMD od tog proseka se izražava u standardnoj devijaciji (SD). Prema Svetskoj zdravstvenoj organizaciji (*World Health Organization* - WHO) i Međunarodnom udruženju za osteoporozu (*International Osteoporosis Foundation* - IOF) osteoporozom se označava T-skor jednak ili niži od 2,5 SD, a osteopenijom nalaz T-skora između -1 i -2,5 SD[14]. Sve pacijentkinje sa vrednostima merenja BMD koje ukazuju na osteoporozu su upućene reumatologu, kao i neke od ispitanica sa nalazom koji ukazuje na osteopeniju i pridruženim tri i više faktora rizika.

Prikupljeni podaci su grafički i tabelarno obrađeni, analizirani korišćenjem kompjuterskog statističkog programa SPSS, verzija 20. Kategorijalne varijable su predstavljene kao frekvencije (učestalosti) i izražene su u procentima. Podaci su analizirani deskriptivnom statistikom, a za utvrđivanje razlike između varijabli od značaja korišćen je Hi-kvadrat test. Statistički značajnom se smatrala p vrednost < 0,05.

Method

The research was conducted at the outpatient clinic Stepojevac, PHC "Dr. Djordje Kovacevic," in Lazarevac from September to December 2016. The study involved 58 postmenopausal women over the age of 45. A single physician conducted the research, and all participants provided voluntary consent for the study. Data on risk factors for osteoporosis were collected through patient history during regular visits and by reviewing medical records. The information gathered included family history of osteoporotic fractures and osteoporosis, personal history of previous fractures, instances of early menopause (before the age of 45), and longer-than-12-month loss of menstrual bleeding (excluding instances of pregnancy, menopause, or hysterectomy). Additionally, data were obtained regarding harmful habits, such as smoking and excessive alcohol consumption (defined as more than two units per day). We observed a decrease in body height of more than 3 cm in patients who were undergoing glucocorticoid therapy for three months or longer, had an inflammatory rheumatic disease, hyperthyroidism, frequent diarrhea, or a diagnosed bowel disease leading to absorption disorders. Body Mass Index (BMI) was calculated for all participants. During this period, individuals with one or more risk factors were referred for a Bone Mineral Density (BMD) scan of the lumbar spine and hip using Dual-energy X-ray Absorptiometry (DEXA). Depending on the BMD results and existing risk factors, further referrals to a rheumatologist were made as needed. For assessing normal bone density, the average bone density of a young, healthy female is used as a reference. This particular measurement obtained from a DEXA scan is referred to as the T-score, which indicates how a patient's bone density measurement (BDM) deviates from the average value, represented in standard deviations (SD). According to the World Health Organization (WHO) and the International Osteoporosis Foundation (IOF), a T-score of -2.5 SD or lower is classified as osteoporosis, while a T-score between -1 and -2.5 SD is considered osteopenia.[14] All patients showing BDM results consistent with osteoporosis, as well as those with osteopenia who have three or more risk factors, are referred to a rheumatologist.

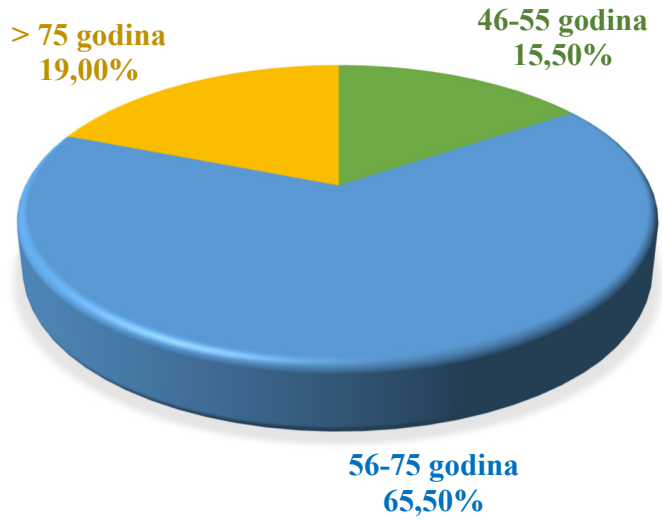
The gathered data were processed using figures and tables and analyzed with the statistical software SPSS, version 20. Categorical variables were presented as frequencies and expressed as percentages. Descriptive statistics were employed for data analysis. To estimate the differences between important variables, we used the chi-square test. A p-value of less than 0.05 was considered statistically significant.

Rezultati

Istraživanjem je obuhvaćeno 58 postmenopauzalnih žena starijih od 45 godina. Prosečna starost ispitanica bila je 65,62 ± 8,38 godina. Starosna distribucija ispitanica prikazana je u grafikonu 1.

Results

The study involved 58 postmenopausal women aged over 45 years. The average age of the participants was 65.62 ± 8.38. The age distribution of the participants is illustrated in Figure 1.



Grafikon 1. Distribucija ispitanica po starosti
Graph 1*. Distribution of respondents by age*

Najzastupljeniji ispitivani faktori rizika za nastanak osteoporoze bili su: rana menopauza kod 19 (32,8%) ispitanica, pušenje cigareta kod 18 (31,0%) i prisustvo hronične bolesti kod 15 (25,9%). Pregled zastupljenosti svih ispitivanih faktora rizika kod ispitanica prikazan je u tabeli 1.

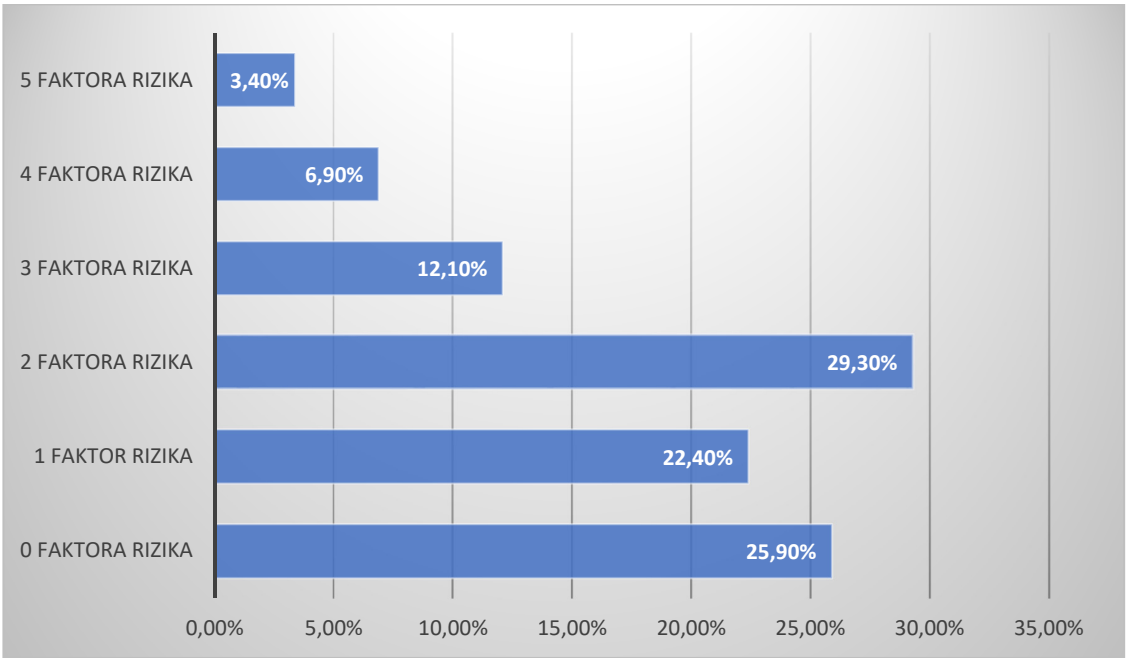
The most commonly researched risk factors for osteoporosis among the participants included: early menopause in 19 participants (32.8%), cigarette smoking in 8 participants (31.0%), and chronic diseases in 15 women (25.9%). A review of the prevalence of these risk factors among the participants is presented in Table 1.

Tabela 1. Prisustvo faktora rizika za nastanak osteoporoze
Table 1. *Presence of risk factors for osteoporosis*

Faktori rizika/risk factors	**N**	**%**
Porodična anamneza preloma/osteoporoze	6	10,3
Lična anamneza ranijeg preloma	12	20,7
Smanjenje visine	11	19,0
BMI <19	8	13,8
Korišćenje kortikosteroida	3	5,2
Zloupotreba alkohola	1	1,7
Navika pušenja cigareta	18	31,0
Hronična bolest	15	25,9
Rana menopauza	19	32,8
Sekundarna amenoreja	1	1,7

U pogledu broja prisutnih faktora rizika, više od polovine ispitanica (51,7%) imalo je jedan ili dva faktora rizika. Bez prisutnih faktora rizika je bilo njih 15 (25,9%). Tri i više faktora rizika imalo je njih 13 (22,4%) (Grafikon 2).

More than half of the participants (51.7%) had one or two risk factors. Additionally, 15 women (25.9%) had no risk factors at all. On the other hand, 13 women (22.4%) had three or more risk factors (see Figure 2).



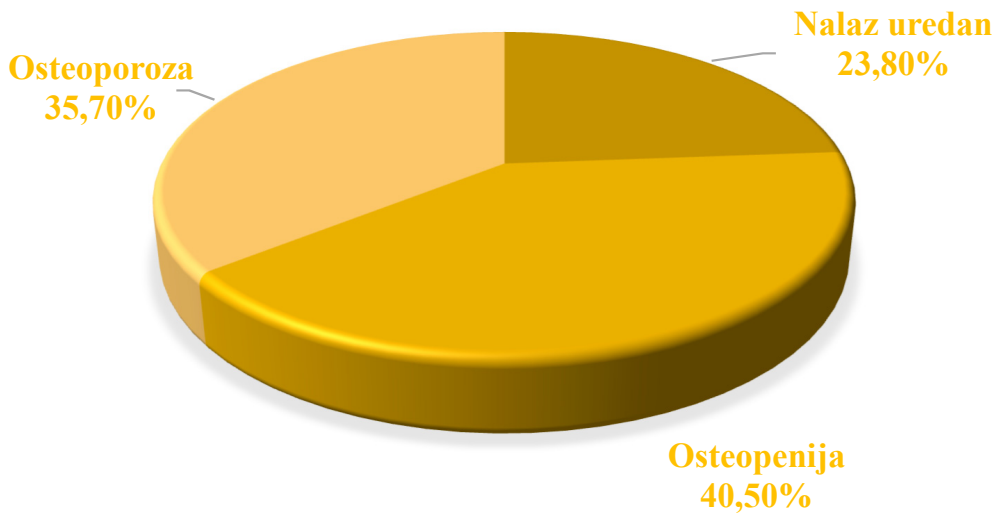
Grafikon 2. Distribucija ispitanica po broju prisutnih faktora rizika
Graph 2. *Distribution of respondents by number of risk factors*

Sve ispitanice (sem jedne koja nije bila motivisana) sa jednim ili više faktora rizika su bile upućene na DEXA - ukupno 42 (72,4%) (Tabela 2). Kod njih 15 (35,7%) je dijagnostikovana osteoporoza, 17 (40,5%) je imalo osteopeniju, a 10 (23,8%) uredan DEXA nalaz (Grafikon 3).

All participants, except for one who lacked motivation, were referred for a DEXA scan if they had one or more risk factors. A total of 42 participants (72.4%) underwent the scan (see Table 2). Of these, osteoporosis was diagnosed in 15 women (35.7%), 17 women (40.5%) had osteopenia, and 10 women (23.8%) had normal DEXA findings (see Figure 3).

Tabela 2. Distribucija ispitanica po upućivanju na DEXA u odnosu na broj faktora rizika
Table 2. *Distribution of respondents by referral to DEXA in relation to the number of risk factors*

Broj faktora rizika/Number of risk factors		Upućivanje na DEXA/Referral to DEXA
0	N	0
	%	0,0%
1	N	12
	%	92,3%
2	N	17
	%	100,0%
3	N	7
	%	100,0%
4	N	4
	%	100,0%
5	N	2
	%	100,0%
Ukupno/Total	N	42
	%	72,4%



Grafikon 3. Nalaz DEXA
Graph 3. *DEXA finding*

Jednofaktorskom analizom varijanse nije dobijena statistički značajna razlika u starosnoj dobi između četiri grupe ispitanica (F = 0,857; p = 0,626). Prosečne vrednosti godina starosti ispitanica u grupama prema nalazu DEXA su prikazane u tabeli 3.

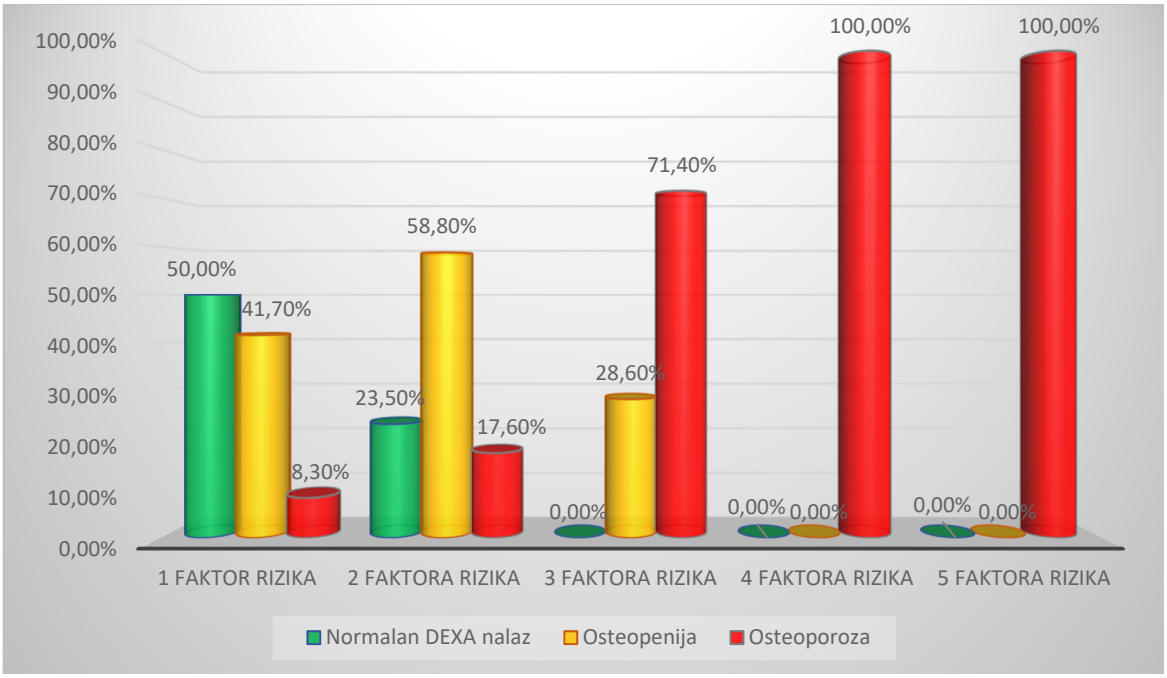
Univariate analysis of variance did not show a statistically significant difference in age across the four participant groups (F = 0.857; p = 0.626). The mean age of the groups, in relation to DEXA findings, is shown in Table 3.

Tabela 3. Prosečne vrednosti godina starosti ispitanica u grupama prema nalazu DEXA
Table 3. *Average values of the age of the respondents in the groups according to the DEXA findings*

DEXA upućivanje i nalaz/ DEXA referral and findings	N	Starost/Age	SD	Min	Max
Nije upućena	16	65,63	8,79	46,00	79,00
Nalaz uredan	10	65,10	8,57	55,00	77,00
Osteopenija	17	63,94	8,02	49,00	78,00
Osteoporoza	15	67,87	8,56	52,00	81,00
Ukupno/Total	58	65,62	8,38	46,00	81,00

Kod ispitanica sa jednim faktorom rizika DEXA nalaz je bio normalan kod njih šest (50,0%). Kod ispitanica sa dva faktora rizika nalaz DEXA je ukazivao na osteopeniju kod njih 10 (58,8%). Kod ispitanica sa tri faktora rizika nalaz DEXA je potvrđivao prisustvo osteporoze kod njih pet (71,4%). Kod svih ispitanica sa četiri i pet faktora rizika nalaz DEXA je ukazao na osteporozu (100,0%) (Grafikon 4).

In participants with one risk factor, DEXA findings were normal in six women (50.0%). Among those with two risk factors, ten women (58.8%) showed signs of osteopenia based on DEXA findings. In participants with three risk factors, DEXA confirmed osteoporosis in five women (71.4%). Notably, in all participants with four or five risk factors, DEXA findings indicated osteoporosis (100.0%) (see Figure 4).



Grafikon 4. Distribucija ispitanica po broju faktora rizika u odnosu na nalaz DEXA
Graph 4. *Distribution of respondents by the number of risk factors in relation to the findings of DEXA*

Tabela 4. Distribucija ispitanica sa 1 ili 2 i 3 ili više faktora rizika u odnosu na nalaz DEXA
Table 4. *Distribution of respondents with 1 or 2 and 3 or more risk factors in relation to DEXA findings*

Faktori rizika/Risk factors		Nalaz DEXA/DEXA finding			Ukupno/Total
		Nalaz uredan/ Normal DEXA finding	Osteopenija/ Osteopenia	Osteoporoza/ Osteoporosis	
1 ili 2	N	10	15	4	29
	%	34,5%	51,7%	13,8%	100,0%
3 i više	N	0	2	11	13
	%	0,0%	15,4%	84,6%	100,0%
Ukupno/Total	N	10	17	15	42
	%	23,8%	40,5%	35,7%	100,0%

Iz tabele 4 vidimo da je od 29 ispitanica sa jednim ili dva prisutna faktora rizika uredan nalaz nađen kod 10 (34,5%), a kod 13 ispitanica sa tri ili više faktora rizika ni kod jedne. Kod svih 13 ispitanica sa tri ili više faktora rizika DEXA nalaz je bio osteoporoza (84,6%) ili osteopenija (15,4%). Hi-kvadrat testom dobijena je visoko statistički značajna razlika u nalazu DEXA kod ispitanica sa jednim ili dva i tri ili više faktora rizika (HI-kvadrat = 20,018; $p < 0,001$).

Diskusija

Iako postoje jasne preporuke za dijagnozu i terapiju osteoporoze, ona često ostaje neprepoznata ili se lečenje ne primenjuje iako je dijagnoza postavljena. Prvi korak u postavljanju dijagnoze je prepoznavanje osoba koje su u povećanom riziku da obole od osteoporoze. Lekar opšte medicine i njegov tim, kao najčešće osobe prvog kontakta pacijenata sa zdravstvenom službom, mogu imati presudnu ulogu u ranom otkrivanju obolelih od osteoporoze ispitivanjem faktora rizika za njen nastanak. Daljom zdravstvenom intervencijom obezbeđuje se blagovremena dijagnoza i lečenje ove bolesti.

Dva najzastupljenija faktora rizika za osteoporozu kod naših ispitanica su bili pušenje i rana menopauza. Mnoge studije su potvrdile da je pušenje nezavistan promenljivi faktor rizika za nastanak osteoporoze[15,16]. Jedan od najzastupljenijih faktora rizika po zdravlje uopšte u Srbiji je upravo upotreba duvana. Čak 30,1% osoba ženskog pola uzrasta 15 i više godina ima naviku stalnog ili povremenog pušenja duvanskih proizvoda, a najveći procenat pušača oba pola (41,3%) je u starosnoj grupi 45–54 godine[17]. Zbog toga nije iznenađujući rezultat u našem istraživanju da je pušenje jedan od dva najzastupljenija faktora rizika za osteoporozu kod naših ispitanica, a procenat zastupljenosti navike pušenja kod njih odgovara proseku u Srbiji. U nedavno objavljenoj studiji o prevremenoj i ranoj menopauzi kod žena u Indiji utvrđena je,

Table 4 shows that out of 29 participants with one or two risk factors, 10 exhibited normal DEXA scan findings, which accounts for 34.5%. In contrast, none of the 13 participants with three or more risk factors had normal findings. Among these 13 participants, DEXA scans revealed osteoporosis in 84.6% and osteopenia in 15.4%. The Chi-square test confirmed a highly statistically significant difference in DEXA findings between participants with two risk factors compared to those with three or more (Chi-square = 20.018; $p < 0.001$).

Discussion

Despite clear recommendations for the diagnosis and treatment of osteoporosis, the condition often goes unrecognized or untreated, even when it has been diagnosed. The first step in diagnosing osteoporosis is identifying individuals at increased risk for the disease. General practitioners and their teams are typically the first health professionals patients contact and play a crucial role in the early detection of osteoporosis by assessing risk factors. Timely health interventions can lead to early diagnosis and effective treatment.

The two most significant risk factors for osteoporosis among our participants were smoking and early menopause. Numerous studies have demonstrated that smoking is an independent risk factor for osteoporosis.independant variable risk factor for osteoporosis[15,16]. One of the most significant health risk factors in Serbia is smoking. Approximately 30.1% of females aged 15 and older smoke regularly or occasionally. The highest percentage of smokers, among both genders, is found in the 45–54 age group, with 41.3% of individuals in this range identifying as smokers.[17]. It is not surprising that our research revealed smoking as one of the two most prevalent risk factors for osteoporosis among our participants. The percentage of smokers in our group aligns with the statistics

između ostalog, značajna povezanost rane menopauze sa pušenjem i upotrebom alkohola[18]. Takođe u nedavno objavljenoj studiji o ranoj menopauzi u našoj zemlji kod postmenopauzalnih žena starosti 50 i više godina, visok procenat je bio onih sa ranom menopauzom (nešto niži nego u našoj studiji, 27,2% vs 32,8%)[19]. U studiji u našoj zemlji iz 2016. godine čak 41,5% žena starijih od 35 godina sa prethodno dijagnostikovanom osteoporozom je dalo podatak o ranoj menopauzi[20]. Zbog toga je važno sagledati i delovati na sve moguće faktore koji doprinose ranoj menopauzi. U tome značajnu ulogu mogu imati upravo lekari opšte medicine, koji bi trebalo da su nosioci preventivnih aktivnosti.

Četvrtina naših ispitanica je imala neki od hroničnih poremećaja, koji predstavljaju povećan rizik za nastanak osteoporoze, kao što su: zapaljenske reumatske bolesti, hipertireoza, poremećaji praćeni crevnom malapsorpcijom. Broj ispitanica u povećanom riziku bio bi veći da su razmatrani i drugi hronični poremećaji, kao što su: dijabetes melitus, hronične respiratorne bolesti, određene neurološke bolesti. Sve je više autora koji istražuju ovu povezanost, ističući značaj različitih imunih ćelija u nastanku različitih tipova osteoporoze s ciljem primene efikasnije terapije[21].

Petina naših ispitanica je imala raniji prelom prilikom manjeg pada u odraslom dobu, što je manje nego u nekoliko drugih studija u našoj zemlji i zemljama u našem okruženju[20,22]. Brojne studije, kako u našoj zemlji tako i van naše zemlje, ukazuju na veći rizik od pada kod osoba sa osteoporozom, posebno starijih od 65 godina[23,24].

Ne postoji jedinstvena međunarodna preporuka za skrining osteoporotičnih preloma. To je potvrdio i jedan veliki sistematski pregled objavljen 2023. godine o efektima i prihvatljivosti skrininga osteoporotičnih preloma u primarnoj zdravstvenoj zaštiti[25]. Rezultati su veoma različiti, a prvi put je detaljnije razmatrana prihvatljivost skrininga i eventualnog lečenja i od strane samog pacijenta. Nije sasvim jasno koja strategija skrininga bi bila najkorisnija. Primena kliničke procene rizika, najčešće primenom upitnika-kalkulatora za procenu rizika od frakture (*The Fracture Risk Assessment Tool* - FRAX), i potom BMD merenja kod žena starosti 65 godina i više najverovatnije će rezultovati u malom smanjenju rizika za nastanak osteoporotičnog preloma u poređenju sa ženama kod kojih nije primenjen skrining. Prema poslednjem vodiču o osteoporozi iz 2022. godine Ujedinjenog Kraljevstva Velike Britanije i Severne Irske (*United Kingdom* - UK), za procenu rizika od osteoporotičnih preloma kod svake osobe oba pola starosti 50 i više godina u slučaju prisustva kliničkih faktora rizika potrebno je primeniti FRAX sistem, prema nađenom stepenu rizika BMD i/ili lečenje[26]. Primena ovih mera zavisi i od dostupnosti u određenom zdravstvenom sistemu. Vođeni mogućnošću da našim pacijentkinjama obezbedimo BMD, odlučili smo se na to da svakoj pacijentkinji sa makar jednim kliničkim faktorom rizika za osteoporozu ponudimo upućivanje na BMD. Zahvaljujući ovakvom pristupu i mogućnosti,

for Serbia. A recently published study on premature and early menopause in women in India also confirmed a significant connection between early menopause, smoking, and alcohol consumption.[18] In a recently published study on early menopause in our country, it was found that among postmenopausal women aged 50 and older, there was a high percentage of those experiencing early menopause, with rates slightly lower than in our study (27.2% compared to 32.8%).[19] A study from our country conducted in 2016 showed that 41.5% of women older than 35, who had previously been diagnosed with osteoporosis, reported experiencing an early menopause.[20] It is crucial to review and address all risk factors that may lead to early menopause. General physicians play an essential role in this matter and should engage in preventive activities.

A quarter of our participants had chronic disorders that increase the risk of osteoporosis, including inflammatory rheumatic diseases, hyperthyroidism, and conditions involving bowel malabsorption. The number of participants at increased risk may have been even higher if other chronic disorders had been considered, such as diabetes mellitus, chronic respiratory diseases, and certain neurological conditions. Numerous researchers have explored this connection, highlighting the role of various immune cells in the development of different types of osteoporosis, which can inform the application of effective therapies.[21]

A fifth of our participants had previously suffered a fracture due to minor trauma in adulthood, which is lower than in our country and regional comparisons. [20,22] Many studies, both from our country and abroad, indicate a higher risk of falls in individuals with osteoporosis, particularly those over the age of 65.[23,24]

There is no consistent international recommendation for screening osteoporotic fractures. This was confirmed in a comprehensive systematic review conducted in 2023 on the effects and acceptability of screening for osteoporotic fractures in primary healthcare.[25] Results vary significantly, and for the first time, the acceptability of screening and subsequent treatment of patients was examined in detail. It is not entirely clear which screening strategy would be the most effective. The use of clinical risk assessment, primarily through a questionnaire-calculator for fracture risk assessment (The Fracture Risk Assessment Tool - FRAX), followed by bone mineral density (BMD) measurement in women over 65, will likely lead to a slight reduction in the risk of osteoporotic fractures compared to women who were not screened. According to the latest 2022 guidelines on osteoporosis for the United Kingdom and Northern Ireland, it is essential to conduct a risk assessment for osteoporotic fractures in individuals aged 50 and older, regardless of gender, who have clinical risk factors. This assessment should utilize the FRAX system, which takes into account the identified risk level of bone mineral density (BMD) and/or treatment options.[26] The application of these measures depends on their availability within

kod četvrtine svih ispitanica je dijagnostikovana osteoporoza i započeto lečenje. I kod naših ispitanica je sa porastom broja faktora rizika rastao i rizik od osteoporoze, ali nije postojala statistički značajna razlika u godinama života u odnosu na različit DEXA nalaz. To ukazuje na važnost sprovođenja skrininga za osteoporozu kod svih postmenopauzalnih žena u našoj sredini, bez obzira na godine života.

Zaključak

Dva najzastupljenija faktora rizika za osteoporozu kod naših ispitanica su bili pušenje i rana menopauza. Osteoporoza je dijagnostikovana kod četvrtine svih ispitanica (25,9%). Naše istraživanje je pokazalo da prisustvo tri i više faktora rizika kod postmenopauzalnih žena značajno povećava rizik od nastanka osteoporoze, nezavisno od godina života. Ograničenjem studije smatramo to što nisu obuhvaćeni svi faktori rizika koji se odnose na: fizičku aktivnost, uzimanje mlečnih proizvoda i kalcijuma, izloženost suncu i uzimanje nadoknade vitamina D, hroničnu bolest, kao što je dijabetes melitus. Prednostima ove studije smatramo mogućnost delovanja na promenljive faktore rizika kod naših ispitanica i podizanje svesti o osteoporozi i faktorima rizika za njen nastanak.

the health system. With the aim of providing our patients with bone mineral density (BMD) assessments, we decided to refer every patient with at least one clinical risk factor for osteoporosis for a BMD evaluation. As a result of this approach and the availability of testing, osteoporosis was diagnosed in a quarter of the participants, and treatment was initiated. Additionally, we found that an increase in the number of risk factors corresponded to a higher risk of developing osteoporosis. However, there was no significant difference in age related to the various DEXA findings. This underscores the importance of screening for osteoporosis in all postmenopausal women in our country, regardless of their age.

Conclusion

The two most significant risk factors for osteoporosis identified in our participants were smoking and early menopause. Osteoporosis was diagnosed in 25.9% of all participants. Our research demonstrated that the presence of three or more risk factors in postmenopausal women significantly increases the risk of osteoporosis, regardless of age. However, a limitation of our study was that we did not include all potential risk factors, such as physical activity, dairy and calcium intake, sun exposure, vitamin D supplementation, and chronic diseases like diabetes mellitus. On the positive side, our study provides an opportunity to address modifiable risk factors among participants and raise awareness about osteoporosis and its associated risks.

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