

INCIDENCIJA AKUTNOG INFARKTA MIOKARDA U REPUBLICI SRBIJI U PERIODU OD 2006. DO 2022. GODINE

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SAŽETAK

Uvod/cilj: Kardiovaskularne bolesti (KVB) predstavljaju vodeći uzrok umiranja na globalnom nivou i odgovorne su za više od 19,8 miliona smrtnih ishoda u 2022. godini, što je 32% svih umrlih prema podacima SZO. Od svih umrlih od KVB čak 85% je umrlo od akutnog infarkta miokarda (AIM) i moždanog udara. Najveći broj umrlih je u zemljama sa srednjim i niskim prihodima. Cilj rada je da se analizira kretanje obolevanja od akutnog infarkta miokarda u Republici Srbiji u periodu od 2006. do 2022. godine.

Metode: Podaci o novoobolelima od AIM za period 2006–2022. godine preuzeti su iz Nacionalnog registra za akutni koronarni sindrom, koji vodi Institut za javno zdravlje Srbije „Dr Milan Jovanović Batut“, kao i iz zvaničnih Zdravstveno-statističkih godišnjaka Republike Srbije za posmatrani period. Korišćene su sirove stope incidencije (CR) i standardizovane stope incidencije (ASR-E i ASR-W), prilagođene evropskoj i svetskoj populaciji.

Rezultati: U posmatranom periodu dolazi do opadanja standardizovanih stopa incidencije standardizovanih prema populaciji Evrope (ASR-E: 170,9 → 147,4 na 100.000 stanovnika) i sveta (ASR-W: 118,2 → 101,8 na 100.000 stanovnika). Kretanje stopa incidencije je variralo tokom posmatranog perioda, tako što je najviša standardizovana stopa incidencije (183,7 na 100.000), standardizovana prema populaciji Evrope, zabeležena 2009. godine, a najniža 2017. godine (132,3 na 100.000), a najviša standardizovana stopa incidencije, standardizovana prema populaciji sveta, kretala se od 126,1 na 100.000 u 2009. godini do 91,0 u 2017. godini.

Zaključak: Smanjenje standardizovanih stopa incidencije za AIM u R. Srbiji, od 2006. do 2022. godine, verovatno je rezultat bolje kontrole faktora rizika (šira upotreba statina i savremenih antihipertenziva u primarnoj i sekundarnoj prevenciji) i uspešnosti nacionalnih preventivnih programa (edukacija stanovništva o simptomima i značaju zdrave ishrane i fizičke aktivnosti, kao i kampanje za prestanak pušenja). Takođe, došlo je i do razvoja mreža angio-sala za hitne intervencije u Srbiji što je omogućilo brže zbrinjavanje pacijenata, što menja sliku ishoda i učestalosti ponovljenih infarkta.

Ključne reči: akutni infarkt miokarda, kardiovaskularne bolesti, incidencija, trend

Uvod

Kardiovaskularne bolesti (KVB) predstavljaju veliku i heterogenu grupu oboljenja koja se prepoznaju kao vodeći uzrok umiranja na globalnom nivou i odgovorne su za više od 19,8 miliona smrtnih ishoda u 2022. godini, što čini oko 32% ukupne smrtnosti prema podacima Svetske zdravstvene organizacije. Od svih umrlih od KVB čak 85% je umrlo od akutnog infarkta miokarda (AIM) i moždanog udara. Najveći broj umrlih je u zemljama sa srednjim i niskim prihodima (75% svih umrlih) (1).

Akutni infarkt miokarda (AIM) nastaje kao posledica akutne ishemije i nekroze srčanog mišića, najčešće usled naglog zatvaranja koronarne arterije, i predstavlja klinički i javnozdravstveni problem od

posebnog značaja (2, 3). Uprkos napretku u prevenciji, dijagnostici i lečenju, AIM i dalje ima veliki javnozdravstveni značaj kako zbog smrtnosti, tako i zbog dugoročnih posledica po kvalitet života i radnu sposobnost obolelih (3, 4). Praćenje incidencije AIM na populacionom nivou ključno je za procenu opterećenja bolešću, identifikaciju dugoročnih trendova i evaluaciju efekata preventivnih i terapijskih intervencija (3, 5). U tom kontekstu, analiza kretanja stopa incidencije AIM predstavlja važnu osnovu za strateško planiranje zdravstvenih resursa i unapređenje nacionalnih programa kontrole KVB.

Cilj rada je da se analizira obolevanje od AIM u Republici Srbiji u periodu od 2006. do 2022. godine.

INCIDENCE OF ACUTE MYOCARDIAL INFARCTION IN THE REPUBLIC OF SERBIA FROM 2006 TO 2022

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SUMMARY

Introduction/Aim: Cardiovascular diseases represent the leading cause of mortality worldwide and were responsible for more than 19.8 million deaths in 2022, accounting for 32% of all deaths according to World Health Organization data. Of all deaths due to cardiovascular diseases, as many as 85% were caused by acute myocardial infarction and stroke. The highest number of deaths occurs in countries with low and middle incomes. The aim of this study was to analyze trends in the incidence of acute myocardial infarction in the Republic of Serbia from 2006 to 2022.

Methods: Data on newly diagnosed cases of acute myocardial infarction for the period 2006–2022 were obtained from the National Registry for Acute Coronary Syndrome, maintained by the Institute of Public Health of Serbia “Dr Milan Jovanović Batut”, as well as from official Health Statistical Yearbooks of the Republic of Serbia for the observed period. Crude incidence rates (CR) and age-standardized incidence rates adjusted to the European and world standard populations (ASR-E and ASR-W) were analyzed.

Results: During the observed period, a decline in age-standardized incidence rates adjusted to the European standard population (ASR-E: 170.9 → 147.4) and to the world standard population (ASR-W: 118.2 → 101.8 per 100,000 population) was observed. Incidence rates varied over time, with the highest age-standardized incidence rate adjusted to the European standard population recorded in 2009 (183.7 per 100,000), and the lowest in 2017 (132.3 per 100,000) (Figure 1). The highest age-standardized incidence rate adjusted to the world standard population ranged from 126.1 per 100,000 in 2009 to 91.0 per 100,000 in 2017.

Conclusion: The reduction in age-standardized incidence rates of acute myocardial infarction in the Republic of Serbia from 2006 to 2022 is likely the result of improved control of cardiovascular risk factors, including wider use of statins and modern antihypertensive therapies in primary and secondary prevention, as well as the effectiveness of national preventive programs such as public education on symptom recognition, healthy diet and physical activity, and smoking cessation campaigns. In addition, the development of networks of catheterization laboratories for emergency interventions in Serbia has enabled faster patient management, thereby influencing clinical outcomes and the incidence of recurrent myocardial infarction.

Keywords: acute myocardial infarction, cardiovascular diseases, incidence, trends

Introduction

Cardiovascular diseases (CVDs) represent a large and heterogeneous group of diseases that are recognized as the leading cause of mortality worldwide and were responsible for more than 19.8 million deaths in 2022, accounting for more 32% of all deaths according to the data of the World Health Organization. Of all deaths caused by cardiovascular diseases, even 85% were caused by acute myocardial infarction (AMI) and stroke. The highest number of deaths occurs in countries with low and middle incomes (75% of all deaths) (1).

Acute Myocardial Infarction (AMI) occurs as the result of acute ischemia and necrosis of the heart muscle, most often due to a sudden blockage in a coronary artery, and it represents a clinical and pub-

lic health issue of great importance (2,3). Despite advances in the prevention, diagnosis and treatment, AMI still remains a major public health concern, due to its mortality and long-term effects on the quality of life and work ability of patients (3,4). Monitoring the population-based incidence of AMI is crucial for the assessment of the burden of this disease, for the identification of long-term trends and evaluation of the effects of preventive and therapeutic interventions (3,5). In this context, the analysis of trends in incidence rates of AMI represents an important basis for the strategic planning of health resources and improvement of national control programs for CVDs.

The aim of this study was to analyze trends in the incidence of acute myocardial infarction in the Republic of Serbia from 2006 to 2022.

Metode

Ova studija je deskriptivnog epidemiološkog tipa i obuhvata period od 2006. do 2022. godine. Podaci o novoobolelima od AIM za period 2006–2022. godine preuzeti su iz Nacionalnog registra za akutni koronarni sindrom, koji vodi Institut za javno zdravlje Srbije „Dr Milan Jovanović Batut”, kao i iz zvaničnih Zdravstveno-statističkih godišnjaka Republike Srbije za posmatrani period.

Sirove stope incidencije za AIM izračunate su na osnovu broja novoobolelih za određenu godinu i procenjenog broja stanovnika sredinom date godine (ako nije u pitanju popisna godina), dok su standardizovane stope izračunate korišćenjem evropske (ASR–E) i svetske (ASR–W) standardne populacije. Sve stope su iskazane na 100.000 stanovnika.

Rezultati

U tabeli 1. prikazan je broj novoobolelih, sirove i standardizovane stope incidencije za AIM i broj

stanovnika Republike Srbije za period 2006 – 2022. godine. U posmatranom periodu uočava se blagi porast sirovih i pad standardizovanih stopa incidencije AIM. Sirova stopa incidencije AIM na teritoriji Republike Srbije je porasla sa 226,6 na 100.000 u 2006. na 228,9 na 100.000 stanovnika u 2022, a standardizovana stopa standardizovana prema populaciji Evrope je opala sa 170,9 na 147,4 na 100.000 stanovnika, kao i standardizovana stopa incidencije standardizovana prema populaciji sveta sa 118,2 na 101,8 na 100.000 stanovnika.

Kretanje stopa incidencije varira između godina, tako što je najviša standardizovana stopa incidencije, standardizovana prema populaciji Evrope, zabeležena 2009. godine (183,7 na 100.000), a najniža 2017. godine (132,3 na 100.000) (grafikon 1). Najviša standardizovana stopa incidencije, standardizovana prema populaciji sveta, kretala se od 126,1 na 100.000 u 2009. godini do 91,0 na 100.000 u 2017. godini.

Tabela 1. Broj novoobolelih, sirove i standardizovane stope incidencije od akutnog infarkta miokarda i procena broja stanovnika, Republika Srbija, 2006–2022. godine

Godina	Broj stanovnika u Srbiji	Broj novoobolelih od AIM	Sirova stopa incidencije (CR)	Standardizovana stopa incidencije prema populaciji Evrope (ASR-E)	Standardizovana stopa incidencije prema populaciji sveta (ASR-W)
2006	7411569	16797	226,6	170,9	118,2
2007	7381579	16805	227,7	168,7	115,7
2008	7350222	17360	236,2	173,9	119,9
2009	7320807	18531	253,1	183,7	126,1
2010	7291436	17857	244,9	176,7	121,4
2011	7258753	18050	248,7	179,8	124,5
2012	7199077	16670	231,6	160,7	110,3
2013	7164132	14377	200,7	138,9	95,8
2014	7131787	16560	232,2	157,2	107,7
2015	7095383	16835	237,3	160,5	110,5
2016	7058322	14624	207,2	138,9	95,8
2017	7020858	13898	198,0	132,3	91,0
2018	6968717	17628	252,5	168,4	116,2
2019	6945235	17519	252,2	165,8	114,4
2020	6899126	16837	244,0	161,5	112,2
2021	6834326	16439	240,5	158,3	109,2
2022	6647003	15216	228,9	147,4	101,8

Methods

This descriptive epidemiological study covered the period from 2006 to 2022. Data on new cases of acute myocardial infarction for the period 2006–2022 were obtained from the National Registry for Acute Coronary Syndrome, maintained by the Institute of Public Health of Serbia “Dr Milan Jovanović Batut”, as well as from official Health Statistical Yearbooks of the Republic of Serbia for the observed period.

Crude incidence rates of AMI were calculated based on the number of new cases for the given year and the estimated mid-year population (if not a census year), while age-standardized incidence rates were calculated based on the European (ASR-E) and world (ASR-W) standard populations. All rates were expressed per 100,000 population.

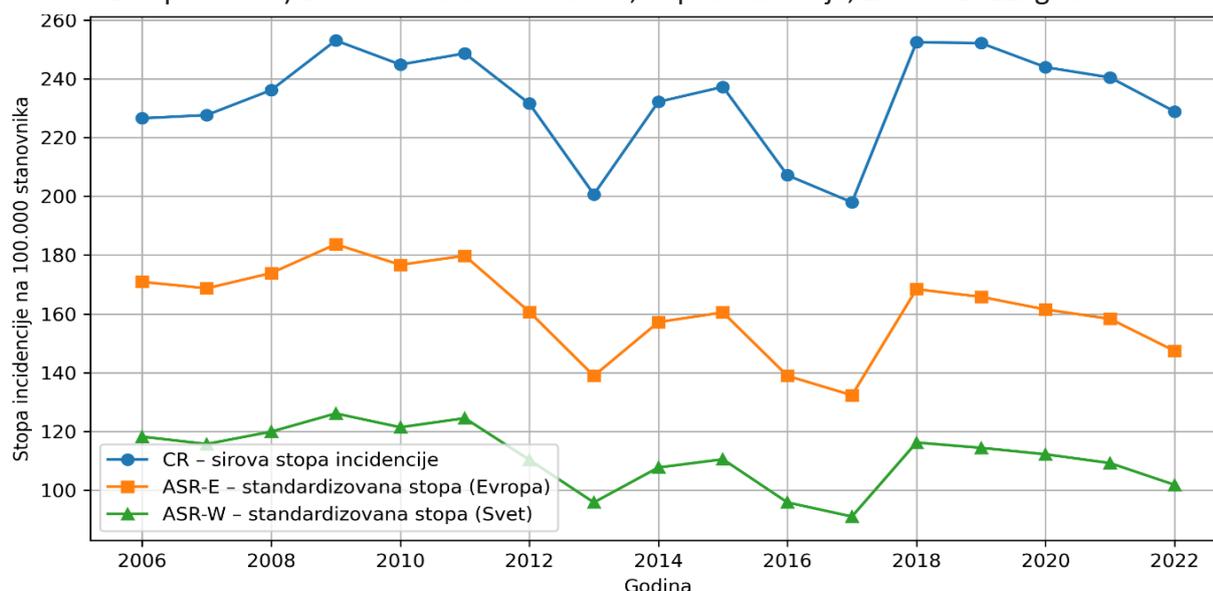
Results

The number of new cases, crude and age-standardized incidence rates of AMI and the estimated

population of the Republic of Serbia in the period 2006–2022 were presented in Table 1. During the observed period, a slight increase in crude incidence rates and a decline in age-standardized incidence rates of AMI were observed. The crude incidence rate of AMI in the territory of the Republic of Serbia increased from 226.6 per 100,000 in 2006 to 228.9 per 100,000 in 2022, while the age-standardized incidence rate adjusted to the European standard population decreased from 170.9 to 147.4 per 100,000 and the age-standardized incidence rate adjusted to the world population from 118.2 to 101.8 per 100,000. Trends in incidence rates varied over time, with the highest age-standardized incidence rate adjusted to the European standard population recorded in 2009 (183.7 per 100,000), and the lowest in 2017 (132.3 per 100,000) (Figure 1). The highest age-standardized incidence rate adjusted to the world population ranged from 126.1 per 100,000 in 2009 to 91.0 per 100,000 in 2017.

Table 1. Number of incident cases, crude and age-standardized incidence rates of acute myocardial infarction, and estimated population, Republic of Serbia, 2006–2022

Year	Population in Serbia	Number of new AMI cases	Crude incidence rate (CR)	Age-standardized incidence rate – European population (ASR-E)	Age-standardized incidence rate – World population (ASR-W)
2006	7411569	16797	226.6	170.9	118.2
2007	7381579	16805	227.7	168.7	115.7
2008	7350222	17360	236.2	173.9	119.9
2009	7320807	18531	253.1	183.7	126.1
2010	7291436	17857	244.9	176.7	121.4
2011	7258753	18050	248.7	179.8	124.5
2012	7199077	16670	231.6	160.7	110.3
2013	7164132	14377	200.7	138.9	95.8
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2017	7020858	13898	198.0	132.3	91.0
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2021	6834326	16439	240.5	158.3	109.2
2022	6647003	15216	228.9	147.4	101.8

Grafikon 1. Kretanje stopa incidencije (sirove, standardizovane prema populaciji Evrope i sveta) za akutni infarkt miokarda, Republika Srbija, 2006 – 2022. godine

Diskusija

Analizom standardizovanih stopa incidencije za AIM (ASR-E i ASR-W) u Srbiji u periodu 2006–2022. godine uočava se opadajući trend obolevanja od ovog oboljenja. ASR-E je smanjena sa 170,9/100.000 na 147,4/100.000, dok je ASR-W opala sa 118,2/100.000 na 101,8/100.000. Ovaj trend ukazuje na postepeno smanjenje opterećenosti društva ovim oboljenjem, što može biti posledica unapređenja organizacije zdravstvene zaštite, dostupnosti terapije i početnih efekata preventivnih mera. Nasuprot tome, zabeležen je porast sirove stope incidencije za AIM što je posledica starenja populacije (sve je više starih ljudi koji su u najvećem riziku od ove bolesti). To znači da u R. Srbiji postoji kontrola faktora rizika za AIM, ali demografski faktori, poput starenja populacije, „maskiraju“ taj uspeh u sirovim stopama (1,3,5).

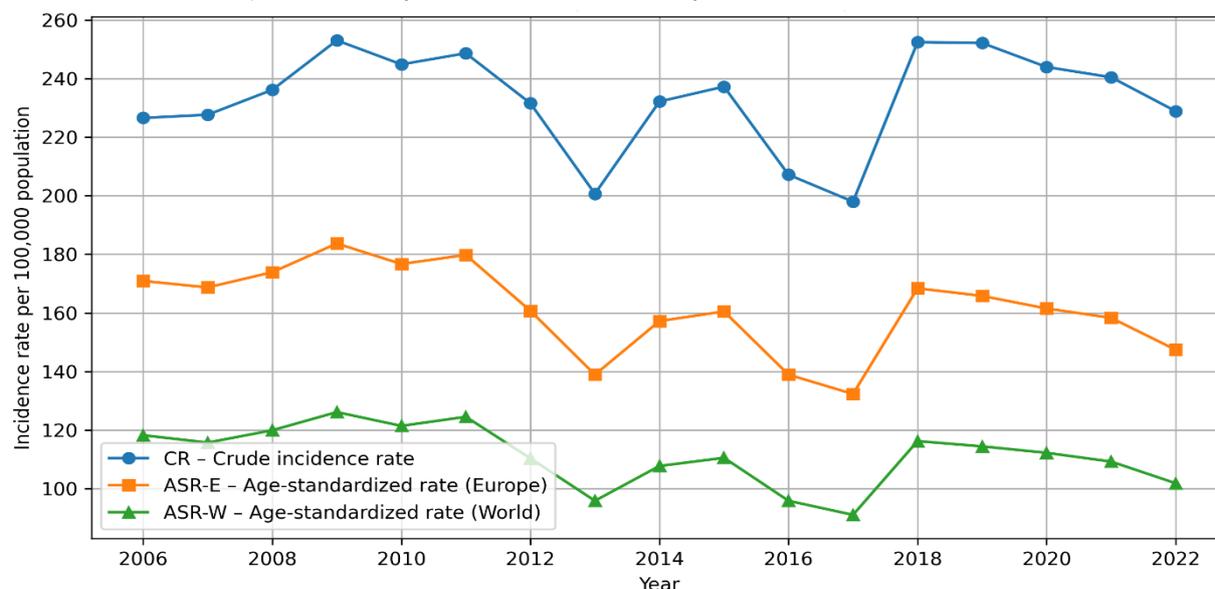
U ovom istraživanju uočeno je da je 2009. godina predstavljala kritičnu tačku sa najvišom zabeleženom stopom incidencije AIM u posmatranom periodu. Jedno od mogućih objašnjenja ovog porasta odnosi se na unapređenje sistema nadzora i intenziviranje rada na Nacionalnom registru za akutni koronarni sindrom, što je moglo doprineti potpunijem i preciznijem prijavljivanju slučajeva. Pored toga, tokom ovog perioda u kliničku praksu u Srbiji uvedeni su osetljiviji biomarkeri nekroze miokarda, pre svega srčani troponini, koji su omogućili detekciju manjih infarkta (NSTEMI) koji bi ranije često ostali dijagnostikovani kao nestabilna angina pectoris (6).

Ne treba zanemariti ni uticaj šireg društvenog konteksta, budući da se 2009. godina poklapa sa periodom globalne ekonomske krize, kao i pandemijom gripa A (H1N1), a prethodna istraživanja ukazuju da akutni stres i teške respiratorne infekcije mogu povećati rizik od akutnih koronarnih događaja (7,8).

Najniže vrednosti standardizovanih stopa incidencije AIM u posmatranom periodu zabeležene su 2017. godine (ASR-E: 132,3 na 100.000 stanovnika), što predstavlja važan indikator povoljnog epidemiološkog trenda. Ovaj nalaz se može tumačiti kao rezultat kumulativnog efekta dugoročnih preventivnih strategija i unapređenja u organizaciji kardiološke službe u Republici Srbiji. Do tog perioda došlo je do značajnog proširenja mreže centara za perkutane koronarne intervencije (pPCI), kao i šire primene savremene farmakoterapije u primarnoj i sekundarnoj prevenciji, što je doprinelo smanjenju učestalosti prvih i ponovljenih koronarnih događaja. Istovremeno, stabilizacija sistema prijavljivanja i standardizacija metodologije rada registra za akutni koronarni sindrom smanjuju verovatnoću da su uočene promene posledica administrativnih faktora, već pre odražavaju realne promene u epidemiološkom obrascu bolesti (5).

Nakon ovog vrha, postepeni pad stopa incidencije svedoči o stabilizaciji sistema prijavljivanja, ali pre svega o kumulativnom efektu uvođenja savremene terapije (statini, dvojna antiagregaciona terapija) i masovnijoj primeni primarne perkutane koronarne intervencije (pPCI) u Srbiji, što je značaj-

Figure 1. Trends in incidence rates (crude, age-standardized to the European and world standard populations) of acute myocardial infarction, Republic of Serbia, 2006–2022



Discussion

The analysis of age-standardized incidence rates of AMI (ASR-E and ASR-W) showed a decreasing trend in the incidence of this disease in Serbia in the period 2006–2022. ASR-E decreased from 170.9/100,000 to 147.4/100,000, while ASR-W decreased from 118.2/100,000 to 101.8/100,000. This trend pointed to the gradual reduction in the burden of this disease on society, which may be the consequence of the improvement of health care organization, the availability of therapy and the initial effects of preventive measures. In contrast, an increase in crude incidence rates of AMI was recorded, which is the consequence of population aging (the increased proportion of older people, who face the highest risk of this disease). This means that there is a control of risk factors for AMI in the Republic of Serbia, but demographic factors, such as population aging, “mask” this success in crude rates (1,3,5).

It was observed in this study that the year 2009 was a critical point with the highest recorded incidence rate of AMI in the observed period. One of the possible explanations for this increase included the improvement of the surveillance system and the intensification of work on the National Registry for Acute Coronary Syndrome, which could have contributed to more complete and accurate reporting of cases. In addition, during this period, more sensitive biomarkers of myocardial necrosis, first of all cardiac troponins, were introduced into clinical practice in Serbia, which enabled the detection of

smaller infarctions (NSTEMI) that previously often remained diagnosed as unstable angina pectoris (6). The influence of the wider social context should not be ignored, since the year 2009 coincided with the period of the global economic crisis, as well as with the A (H1N1) pandemic, and the previous research indicated that acute stress and severe respiratory infections could increase the risk of acute coronary events (7,8).

The lowest values of age-standardized incidence rates of AMI in the observed period were recorded in 2017 (ASR-E: 132.3 per 100,000), which is an important indicator of favorable epidemiological trend. This finding can be interpreted as the result of the cumulative effect of long-term preventive strategies and improvements in the organization of cardiology services in the Republic of Serbia. By that time period, the significant expansion of the network of centers for primary percutaneous coronary intervention (pPCI) had occurred, as well as wider use of modern pharmacotherapy in primary and secondary prevention, which contributed to a decrease in the incidence of first and recurrent coronary events. At the same time, the stabilization of the reporting system and the standardization of the work methodology of the Registry for Acute Coronary Syndrome reduced the probability that the observed changes were the result of administrative factors, but rather reflected real changes in the epidemiological pattern of the disease (5).

After this peak, the gradual decrease in incidence rates testifies to the stabilization of the re-

no doprinelo boljem zbrinjavanju pacijenata i smanjenju recidiva.

Nakon 2017. godine uočava se blagi porast ili stagnacija standardizovanih stopa incidencije akutnog infarkta miokarda, što se u poslednjim godinama posmatranog perioda (2020–2022) može dovesti u vezu sa pandemijom COVID-19. Tokom ovog perioda zabeleženi su poremećaji u funkcionisanju zdravstvenog sistema, uključujući otežan pristup redovnim kontrolama, odlaganje dijagnostičkih i terapijskih procedura, kao i smanjeno korišćenje preventivnih zdravstvenih usluga. Pored indirektnih efekata pandemije, sve je više dokaza da infekcija virusom SARS-CoV-2 može biti povezana sa povećanim rizikom od tromboembolijskih i akutnih koronarnih događaja kod vulnerabilnih pacijenata, što je moglo doprineti uočenim promenama u stopama incidencije u ovom period (9).

Poređenje standardizovanih stopa incidencije akutnog infarkta miokarda (AIM) između Srbije i drugih evropskih zemalja zahteva oprez zbog razlika u metodologiji prikupljanja podataka, definiciji slučajeva i stepenu razvijenosti nacionalnih registara. Ipak, u skladu sa podacima iz velikih međunarodnih studija o opterećenju KVB, standardizovana stopa incidencije prema svetskoj populaciji (ASR-W) u Srbiji iznosila je 101,8 na 100.000 stanovnika u 2022. godini, uz opadajući trend u odnosu na prethodne godine, što Srbiju svrstava u grupu zemalja sa umereno visokim do visokim KV rizikom (4).

U poređenju sa zemljama zapadne Evrope, poput Francuske i Italije, koje beleže znatno niže stope incidencije AIM (često ispod 50 na 100.000 stanovnika), vrednosti u Srbiji su i dalje dva do tri puta više (10,11). Sa druge strane, stope incidencije u Srbiji slične su onima zabeleženim u zemljama istočne i jugoistočne Evrope, kao što su Bugarska i Rumunija, koje tradicionalno imaju viši KV rizik (5). Pojedine zemlje regiona, poput Hrvatske i Slovenije, ostvarile su brži i izraženiji pad incidencije AIM, što se u literaturi dovodi u vezu sa ranijim i doslednijim sprovođenjem populacionih preventivnih mera, uključujući strožu regulaciju pušenja i veći obuhvat preventivnim zdravstvenim pregledima (12). Dodatno, visoka prevalencija pušenja, nepovoljne prehrambene navike sa visokim unosom soli i zasićenih masti, kao i rastuća učestalost dijabetesa tipa 2, i dalje predstavljaju značajne determinante povišenog rizika od AIM u Srbiji u poređenju sa prosekom Evropske unije (13). U poređenju sa evropskim zemljama sa niskom stopom incidencije AIM Srbija

i dalje beleži nepovoljniju epidemiološku sliku, što naglašava potrebu za dodatnim unapređenjem preventivnih i terapijski usmerenih zdravstvenih politika (5, 10).

Zaključak

Zabeleženi opadajući trend standardizovanih stopa incidencije AIM u Republici Srbiji u periodu od 2006. do 2022. godine ukazuje na pozitivan efekat unapređenih preventivnih i terapijskih intervencija, uključujući širenje mreže centara za perkutanu koronarnu intervenciju. I pored povoljnih trendova, KVB i dalje predstavljaju vodeći javnozdravstveni izazov, što ukazuje na potrebu za daljim jačanjem populacionih preventivnih strategija. Neophodno je u budućnosti intenzivirati nacionalne skrining programe i dodatno raditi na ranoj kontroli faktora rizika, sa posebnim fokusom na edukaciju mlađih starosnih grupa o stilovima života. Dalja istraživanja treba usmeriti ka analizi regionalnih nejednakosti u dostupnosti terapije kako bi se osigurao ravnopravan trend opadanja obolevanja na teritoriji cele države.

LITERATURA

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porting system, but first of all, to the cumulative effect of the introduction of modern therapy (statins, dual antiplatelet therapy) and more massive use of primary percutaneous coronary intervention (pPCI) in Serbia, which significantly contributed to better patient care and reduction in relapses.

After 2017, a slight increase or stagnation of standardized incidence rates of myocardial infarction was observed, which could be associated with the COVID-19 pandemic in the last years of the observed period (2020-2022). During this period, disruptions in the functioning of the health system were recorded, including the limited access to regular check-ups, delays in diagnostic and therapeutic procedures, as well as reduced use of preventive health services. In addition to the indirect effects of the pandemic, there is increasing evidence that SARS-CoV-2 infection may be associated with an increased risk of thromboembolic and acute coronary events in vulnerable patients, which may have contributed to the observed changes in incidence rates during this period (9).

The comparison of age-standardized incidence rates of acute myocardial infarction (AMI) between Serbia and other European countries requires caution due to differences in data collection methodology, case definition, and level of development of national registries. However, in accordance with the data from large international studies on the burden of CVDs, the age-standardized incidence rate adjusted to the world standard population (ASR-W) in Serbia amounted to 101.8 per 100,000 in 2022, with a decreasing trend in comparison with the previous years, which places Serbia in the group of countries with a moderately high to high CV risk (4).

In comparison to Western European countries, such as France and Italy, where significantly lower incidence rates of AMI were recorded (often below 50 per 100,000), the values in Serbia were still two to three times higher (10,11). On the other hand, the incidence rates in Serbia were similar to those rates recorded in Eastern and Southeastern European countries, such as Bulgaria and Romania, which traditionally had a higher CV risk (5). Some countries of the region, such as Croatia and Slovenia, had a faster and more pronounced decline in the incidence of AMI, which was associated in the literature with earlier and more consistent implementation of preventive measures, including stricter regulation of smoking and greater coverage of preventive health examinations (12). In addition, the high prevalence of smoking, unfavorable dietary

habits with a high intake of salt and saturated fat, as well as the increasing incidence of diabetes type 2 continued to represent significant determinants of the increased risk of AMI in Serbia compared to the European Union average (13). Compared to European countries with the low incidence rate of AMI, more unfavorable epidemiological picture was recorded in Serbia, which emphasized the need for additional improvement of preventive and therapeutically-oriented health policies (5,10).

Conclusion

The recorded decreasing trend of age-standardized incidence rates of AMI in the Republic of Serbia from 2006 to 2022 pointed to the positive effect of improved preventive and therapeutic interventions, including the expansion of the network of centers for percutaneous coronary intervention. Despite more favorable trends, CVDs still represent the leading public health concern, which points to the need for further strengthening of population prevention strategies. In the future, it is necessary to intensify national screening programs and additionally work on the early control of risk factors, with a special focus on education of younger population groups about lifestyles. Further research should be directed towards the analysis of regional inequalities related to the availability of therapy in order to ensure an equally decreasing trend of incidence in the territory of the whole country.

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