

Analiza vremenskih nizova smrtnosti i bolničkog otpusta od akutnog infarkta miokarda u Hrvatskoj

Time series analysis of mortality and hospital discharges from acute myocardial infarction in Croatia

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Uvod: Skupina ishemijskih bolesti srca (IBS) godinama predstavlja vodeći uzrok smrtnosti u Republici Hrvatskoj (RH).^{1,2} Tijekom 2017. godine od IBS-a je umrlo 11.069 osoba.³ Analizirajući vremenske nizove smrtnosti od akutnog infarkta miokarda (AIM), koji je vodeća manifestacija IBS-a, cilj ovog rada je prikazati trendove smrtnosti i bolničkog liječenja od ove bolesti u RH.

Metode: Analizirani su podaci Državnog zavoda za statistiku i Hrvatskog zavoda za javno zdravstvo za razinu RH i županija u razdoblju od 2001. do 2016. godine o smrtnosti od AIM-a (dijagnoza I21 prema MKB-10 klasifikaciji bolesti). Dobno standardizirane stope smrtnosti (DSSS) računane su na procjene stanovništva za svaku godinu. Kako bi stope bile što realnije standardizacija je rađena na Popis stanovništva RH iz 2011. godine. Podaci o učestalosti bolničkog liječenja za dijagnozu I21 analizirani su za razdoblje od 2009. do 2016. godine od kada se u bolničkom sustavu koristi DTS (dijagnostičko-terapijski sustav) kao jedini i službeni način evidentiranja, obračunavanja i fakturiranja zdravstvenih usluga u bolničkoj zdravstvenoj zaštiti.

Rezultati: Tijekom promatranog razdoblja uočava se kontinuirani pad stope DSSS od AIM (**slika 1**). Tijekom 2001. godine u Gradu Zagrebu DSSS od AIM iznosila je 114,71, slično području RH (117,69), dok je u Zagrebačkoj županiji ova stopa je bila znatno viša i iznosila je 171,28/100.000 stanovnika. U 2016. godini DSSS za AIM su se bitno snizile i iznosile su 85,97 za Zagrebačku županiju, za područje RH 75,79, dok je za Grad Zagreb DSSS iznosila 50,90/100.000 stanovnika (**tablica 1**). Najniže DSSS od AIM u 2016. godini registrirane su u Dubrovačko-neretvanskoj (37,85)

Introduction: Ischemic heart disease (IHD) has been the leading cause of mortality in the Republic of Croatia (RoC) for years.^{1,2} During the year 2017, 11,069 persons died of IHD.³ Analyzing the time series of mortality of acute myocardial infarction (AMI), which is the leading manifestation of IHD, the aim of this paper is to show the trends of mortality and in-patient treatment of this disease in the RoC.

Methods: The analysis of the data of the Croatian Bureau of Statistics and the Croatian Public Health Institute on mortality of AMI (diagnosis I21 according to ICD-10 classification of the disease) during the period from 2001 to 2016 has been made at the level of the RoC and the counties. Age-standardized death rates (ASDR) were calculated based on population estimates for each year. In order to present the rates as realistic as possible, the standardization was performed on the 2011 Census of the RoC. The data on the frequency of in-patient treatment for the diagnosis I21 has been analyzed for the period from 2009 to 2016, when the hospital system used DTS (diagnostic and therapeutic system) as the only and official way of recording, accounting and invoicing medical services in hospital healthcare system.

Results: During the observed period, a continuous decline in ASDR of AMI (**Figure 1**) has been observed. In 2001, ASDR of AMI was 114.71 in the City of Zagreb, similar to that in region of the RoC (117.69), while this rate was considerably higher in the County of Zagreb and was 171.28/100,000 inhabitants. In 2016, ASDR of AIM significantly decreased and accounted for 85.97 for the County of Zagreb, while ASDR was 75.79 for the RoC, and ASDR accounted for 50.90/100,000 inhabitants for the City of Zagreb (**Table 1**).

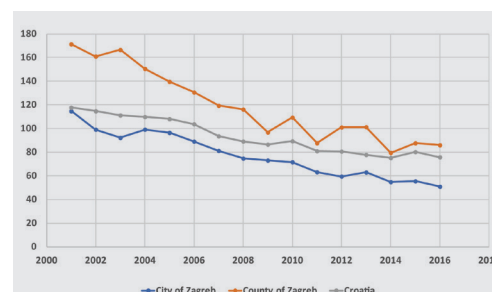


FIGURE 1. The trend of age-standardized death rate for diagnosis I21 for the Republic of Croatia, the City of Zagreb and the County of Zagreb from 2001 to 2016.

(data source: Croatian Institute of Public Health)

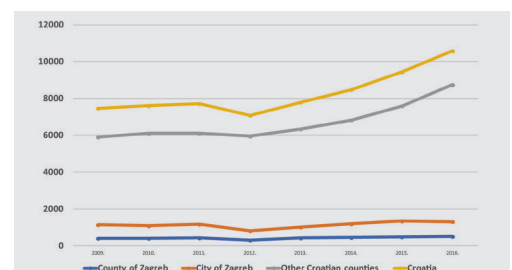


FIGURE 2. The trend of hospital discharges from acute myocardial infarction (diagnosis I21 according to ICD-10) in the County of Zagreb, City of Zagreb, the other Croatian counties and in total in the Republic of Croatia from 2009 to 2016.

(data source: Croatian Institute of Public Health)

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TABLE 1. Age-standardized death rates of acute myocardial infarction (diagnosis I21 according to ICD-10) for the Croatian counties and the Republic of Croatia in 2016.

County	Age-standardized death rate (ASDR/100,000 inhabitants)
Dubrovnik-Neretva	37.85
Split-Dalmatia	49.32
City of Zagreb	50.90
Primorje-Gorski Kotar	58.53
Karlovac	59.01
Zadar	64.26
Lika-Senj	64.45
Šibenik-Knin	64.91
Virovitica-Podravina	75.45
Republic of Croatia	75.79
Zagreb County	85.97
Istra	86.15
Međimurje	86.69
Bjelovar-Bilogora	90.01
Koprivnica-Križevci	92.93
Sisak-Moslavina	100.48
Brod-Posavina	100.54
Požega-Slavonia	103.67
Krapina-Zagorje	106.04
Vukovar-Srijem	106.57
Osijek-Baranja	117.65
Varaždin	119.98

(data source: Croatian Institute of Public Health)

TABLE 2. Changes of the age-standardized death rates of acute myocardial infarction (diagnosis I21 according to ICD-10) for the Croatian counties and the Republic of Croatia in 2016 compared with those in 2001.

County	Changes of the age-standardized death rates 2016 vs 2001 (%)
City of Zagreb	-55.62
Zagreb County	-49.81
Republic of Croatia	-35.60
Virovitica-Podravina	-49.54
Primorje-Gorski Kotar	-47.39
Sisak-Moslavina	-45.65
Split-Dalmatia	-43.98
Dubrovnik-Neretva	-39.76
Karlovac	-37.40
Šibenik-Knin	-35.57
Međimurje	-33.78
Zadar	-31.55
Lika-Senj	-31.11
Brod-Posavina	-30.09
Koprivnica-Križevci	-29.03
Krapina-Zagorje	-22.94
Istra	-18.08
Požega-Slavonia	-16.11
Osijek-Baranja	-12.55
Bjelovar-Bilogora	-10.19
Varaždin	2.3
Vukovar-Srijem	23.95

(data source: Croatian Institute of Public Health)

i Splitsko-dalmatinskoj županiji (49,32), dok su DSSS od AIM bile najviše u Varaždinskoj (119,98) i Osječko-baranjskoj županiji (117,65/100.000 stanovnika). Analizom promjena DSSS od AIM za 2016. u odnosu na 2001. godinu prema hrvatskim županijama (**tablica 2**), registrirano je najviše sniženje DSSS u Gradu Zagrebu za 55,62% i Zagrebačkoj županiji 49,81%, dok je u istom razdoblju u Republici Hrvatskoj DSSS od AIM-a snižena za 35,60%. Učestalost bolničkog liječenja od AIM u RH u razdoblju od 2009. do 2016. godine u znatnom porastu (41,5%) je u svim hrvatskim županijama (**slika 2**).

Zaključak: Kombinirani pristup pridržavanja propisivanja terapije sukladno smjernicama, dostupna i pravodobna intervencija kod AIM u Hrvatskoj mreži primarne perkutane koronarne intervencije⁴, uz brojne znanstvene i stručne aktivnosti te preventivne i promotivne programe doveo je do boljih ishoda AIM. U promatranom razdoblju zabilježen je pad smrtnosti od AIM za 35%, dok se broj hospitalizacija povećao.

In 2016, the lowest ASDR of AMI was recorded in the County of Dubrovnik and Neretva (37.85) and County of Split and Dalmatia (49.32), while ASDR of AMI was highest in Varaždin (119.98) and County of Osijek and Baranja (117.65/100,000 inhabitants). Analyzing the changes to ASDR of AMI for the year 2016 compared to those in 2001 by the Croatian counties (**Table 2**), the highest decrease in ASDR by 55.62% was recorded in the City of Zagreb and by 49.81% in the County of Zagreb, while ASDR of AMI decreased by 35.60% during the same period in the Republic of Croatia. The frequency of in-patient treatment of AMI in the RoC during the period from 2009 to 2016 significantly increased (41.5%) in all Croatian counties (**Figure 2**).

Conclusion: The combined approach to adhering to prescribing the therapy according to the guidelines is an available and timely intervention in AMI in the Croatian Primary Percutaneous Coronary Intervention Network⁴, that when accompanied by numerous scientific and professional activities and preventive and promotional programs has resulted in better AMI outcomes. The decline in mortality by 35% has been recorded in the observed period, while the number of hospitalizations rose.

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